

Flood Control System Component Optimization: HEC-1 Capability

October 1974

revised: September 1977

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the date needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT	TYPE AND DATES COVERED
	October 1974	Training	Document No. 9
	revised September 1977		
4. TITLE AND SUBTITLE	•		5. FUNDING NUMBERS
Flood Control System Comp	onent Optimization: HEC-1 Capabi	lity	
6. AUTHOR(S)			
CEIWR-HEC			
7. PERFORMING ORGANIZATION NAI	• • • • • • • • • • • • • • • • • • • •		8. PERFORMING ORGANIZATION
US Army Corps of Engineers	3		REPORT NUMBER
Institute for Water Resources	5		TD-9
Hydrologic Engineering Cent	er (HEC)		
609 Second Street	,		
Davis, CA 95616-4687			
9. SPONSORING / MONITORING AGE	NCY NAME(S) AND ADDRESS(ES)		10. SPONSORING / MONITORING
N/A			AGENCY REPORT NUMBER
			N/A
11. SUPPLEMENTARY NOTES			
The capability described here	ein is included as a regular feature	of the Sep	tember 1981 version of HEC-1;
	output formats are different from the		
12a. DISTRIBUTION / AVAILABILITY S			12b. DISTRIBUTION CODE
Approved for Public Release	. Distribution of this document is ur	nlimited.	

13. ABSTRACT (Maximum 200 words)

This document presents detailed illustrated examples of facility optimization using HEC-1. The examples were designed to assist in data assembly and coding, output interpretation, and study management. Examples included were constructed in building block sequence to illustrate the relationships between the hydrologic, economic, and cost data to demonstrate selected capability. Examples illustrated include: (1) hydrologic model for existing conditions; (2) economic evaluation of existing conditions; (3) optimization of reservoir and pumping plant with no hydrologic constraints; (4) optimization of reservoir and pumping plant with hydrologic performance constraints; (5) optimization of reservoir, pumping plant, and diversion (unconstrained); (6) optimization of local projects, levee and channel modification (unconstrained); and, (7) optimization of reservoir, pumping plant, and local protection projects with uniform local protection level. The optimization algorithm (or search procedure discussed was developed to assist the planner in systematically and efficiently screening a large number of possible flood control alternatives. It should be emphasized that the optimization procedure of HEC-1 is a planning tool for determining potential and economically feasible flood control alternatives. Once those that have potential are selected, a more detailed simulation of the operational and hydraulic characteristics of a particular component will probably be required as various stages of study (leading to design) are undertaken.

14. SUBJECT TERMS	15. NUMBER OF PAGES		
flood control, systems ana	222		
models, analytical technique	16. PRICE CODE		
diversion, storage, pumpin			
17. SECURITY CLASSIFICATION	18. SECURITY CLASSIFICATION	19. SECURITY CLASSIFICATION	20. LIMITATION OF
OF REPORT	OF THIS PAGE	OF ABSTRACT	ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNLIMITED

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89) Prescribed by ANSI Std. Z39-18 298-102

Flood Control System Component Optimization: HEC-1 Capability

October 1974

revised: September 1977

US Army Corps of Engineers Institute for Water Resources Hydrologic Engineering Center 609 Second Street Davis, CA 95616

(530) 756-1104 (530) 756-8250 FAX www.hec.usace.army.mil

TABLE OF CONTENTS

<u>!</u>	Page
INTRODUCTION	1
BASIC EXAMPLE DESCRIPTION	2
HYDROLOGIC MODEL	2
ECONOMIC EVALUATION—EXISTING CONDITIONS	4
FLOOD CONTROL MEASURE OPTIMIZATION	5
SIZING RESERVOIR AND PUMPING PLANT—UNCONSTRAINED a. Detention Storage	6 6 7
SIZING RESERVOIR AND PUMPING PLANT— HYDROLOGIC PERFORMANCE CONSTRAINED	12
SIZING RESERVOIR, PUMPING PLANT AND DIVERSION	14
SIZING LOCAL PROTECTION PROJECTS	15
SIZING RESERVOIR, PUMPING PLANT, DIVERSION, AND UNIFORM PROTECTION LOCAL PROJECTS	17
OBJECTIVE OF THE FLOOD CONTROL SYSTEM COMPONENT OPTIMIZATION UTILIZING HEC-1	18
REFERENCES	19
APPENDIX A - INPUT DATA	
 EXHIBITS Hydrologic Model (Existing Conditions) Multiflood, Multiplan Model (Economic Evaluation of Existing Conditions) Sizing Reservoir and Pumping Plant (Unconstrained) Sizing Reservoir and Pumping Plant (Hydrologic Performance Constrained) Sizing Reservoir, Pumping Plant and Diversion (Unconstrained) Sizing Levee and Channel Modification (Unconstrained) Sizing Reservoir, Pumping Plant, Diversion and Uniform Protection Local Projects (Unconstrained) 	ned)

LIST OF FIGURES

Figure No.	<u>Title</u>	Page
1	Study Area and Schematic Representation	, 3
2	Adjustment of Component Size by Newton-Raphson Convergence Procedure	. 10
3	Effect of Diversion on Flood Hydrograph	. 15

INTRODUCTION

HEC-1 has been augmented to provide the capability of automatically determining the sizes of flood control system measures that result in maximizing total system net economic benefits subject to possible hydrologic performance targets. The system flood control measures that can be automatically sized are:

. Detention storage reservoir(s)

. Pumping plant(s)

Diversion(s)

 Local protection(s), i.e., channel modification, levee, floodwall

This document presents detailed illustrated examples of facility optimization using HEC-1. The examples are designed to assist in data assembly and coding, output interpretation, and study management.

Examples included are constructed in building block sequence to illustrate the relationships between the hydrologic, economic and cost data and demonstrate selected capability. Examples illustrated include:

- Hydrologic Model for existing conditions.

- Economic evaluation of existing conditions.

- Optimization of Reservoir and Pumping Plant with no hydrologic constraints.

- Optimization of Reservoir and Pumping Plant with hydrologic performance constraints.

- Optimization of Reservoir, Pumping Plant and Diversion (unconstrained).

- Optimization of local protection projects; levee and channel modification (unconstrained).

- Optimization of Reservoir, Pumping Plant and local protection projects with uniform local protection level.

The basic reference for HEC-1 is the Users Manual listed as reference 1. The input data supplement, reference 2, updates Addendum 6 of reference 1 to include the facility optimization capability. Technical Paper No. 42, reference 3, describes the conceptual basis for the optimization problem and explains the characteristics of the flood control measures (except for the local protection capability that has recently been added) and a field application. Reference 4 summarizes various optimization algorithms and also includes a list of references pertinent to the subject matter presented herein. Reference 5 describes in detail the methodology involved in the calculation of expected annual damages.

BASIC EXAMPLE DESCRIPTION

The study area lies in the flood plain of a large river and is presently protected (to a degree) by a major levee. The levee greatly restricts outflow from the study area. Most of the storm runoff (within the study area) originates from the higher elevations (bluff areas), and most flooding occurs in the lower reaches of the study streams. Development in the flood hazard areas consists of agricultural crops, industrial-commercial areas and residential development. Figure 1 is a general map and schematization of the example area.

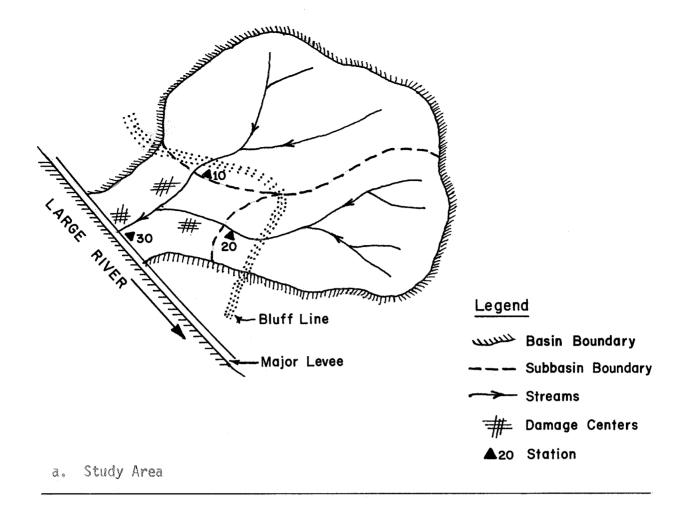
Proposals for protecting vulnerable areas from potential flooding include a detention storage reservoir at station 10, channel modification from station 10 to 30, levee from station 20 to 30, flow diversion (bypass) from station 20 to 30, and a pumping facility with forebay ponding at the basin outlet, station 30 (see Figure 1-a).

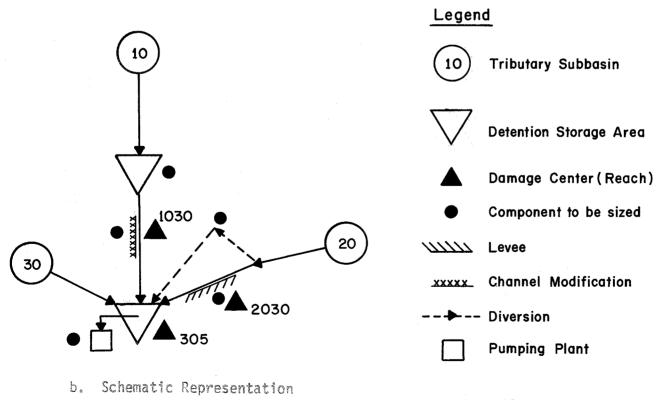
HYDROLOGIC MODEL

The hydrologic model for existing conditions is needed to define the <u>base</u> hydrology and provide a mechanism for evaluating the performance of proposed alternatives. Care must be taken in developing the base model to assure that all feasible alternatives can be easily evaluated and that the pattern hydrologic event is reasonably representative for the area, i.e., will not bias evaluation of alternatives. Data required for coding the basic hydrologic model is given in reference 1.

Since the primary objective of this supplement is illustration of flood control system component optimization, the hydrologic model has been kept simple in that discharge hydrographs of a specific event are read in rather than computed from rainfall-runoff relations during the optimization. (The hydrographs were essentially computed in a previous run). A hypothetical event was synthesized that ranged in frequency from the annual event (1.0 exceedence frequency) in the upper basin reaches to about the 5-year event (.2 exceedence frequency) in the lower basin. Channel routing criteria has been developed for the streams from multiple water surface profile calculations and for the restricted outlet at station 30 from the geometry of the outflow culvert and local topography. Table 1 (Appendix A) contains a tabulation of the hydrologic data for existing conditions.

Exhibit 1, page 1 of 2, is a listing of the HEC-1 input data for the hydrologic model. The hydrologic simulation of existing conditions indicates that for the selected event, the peak flows at stations 10, 20 and 30 are 5,370 cfs, 5,370 cfs and 10,154 cfs, respectively. The maximum storage level achieved at station 30 is 9,557 ac.ft. (maximum storage at station 30 not shown in computer printout included) and the peak outflow is 1,200 cfs.





ECONOMIC EVALUATION—EXISTING CONDITIONS

The economic evaluation for existing conditions provides the base from which economic benefits of alternatives may be evaluated. The economic evaluation of flood damages requires that flow-damage-frequency analysis be performed to develop "expected" (or average) annual damages. Reference 3 and Addendum 3 of reference 1 discuss the general application of flood damage frequency analysis to flood alternative evaluations and describe the concepts embodied in HEC-1.

The information required (in addition to the hydrologic model) is flow (or storage) - damage relationships and exceedence frequency relations at the damage centers. Additional coding is required to set up the multiplan feature of HEC-I and establish the range of floods needed to evaluate the hydrologic and economic effects of alternatives.

The damages in reaches 1030 and 2030 are mostly rural and result from overflow from the respective stream channels. Damage surveys have developed relationships between stage and damages for these reaches for a number of categories of damages. Water surface profile studies developed rating curves for the index stations as shown on Figure 1 so that flow-damage functions, as required by HEC-1, could be developed. The damages at location 305 are mostly urban, commercial and industrial (and are thus large) and occur because of ponding behind the levee. In HEC-1 storage is used instead of stage to represent level and thus a storage-damage function has been developed at this site. Storage is analogous to stage and the function is developed from the usual stage-damage relationship and a site stage-storage relationship.

The required exceedence frequency relationships for stations 10 and 20 were based on a partial duration series analysis because significant damages occur from events that occur more frequently than the annual event. These curves were developed from regional relationships developed in other studies. The required frequency relationship for station 30 is storage-exceedence frequency. This function was derived by developing synthetic events that would reproduce the regional curves at station 10 and 20, simulating the hydrologic operation of the system for these events, and plotting the resulting peak storage levels for these events versus their exceedence frequencies. Table 2 (Appendix A) contains the economic and frequency data for the damage centers.

The determination of the range of floods needed requires evaluation of the exceedence frequency relations, base hydrology and damage relations. The objective in developing the range of floods (multi-plan flood ratios) is to provide for <u>automatic</u> revision of the exceedence frequency relationship so that expected annual damages can be computed for alternative proposals. The procedure used for automatically revising the frequency curve is explained in Addendum 3 of reference 1. To accomplish this, the

ratios should develop floods that cover the range of damaging floods at all damage centers; in our example, the range extends from the six times per year event at damage centers 1030 and 2030 to above the .005 event at 305. The ratios contained in Table 2 (Appendix A) when applied to the synthetic event of the hydrologic model adequately cover the range.

The multi-plan coding has been prepared for two plans, which is necessary for the optimization examples following. The two plans are both for existing conditions which is of course redundant. If the multi-plan capability were being applied by itself, coding should be for as many alternatives as is desired for study. Exhibit 2, pages 1 and 2, are a complete listing of data input with notations as to revisions required from the basic hydrologic model and additions for the multi-plan evaluation.

The output for a multi-plan run includes complete hydrologic simulation for existing conditions and the proposed plan of improvement (none for example) for each of the range of runoff events (nine for the example) and integration of the damage relationships. The results indicate expected annual damages under existing conditions are \$33,580, \$33,580 and \$1,110,210 for damage reaches 1030, 2030 and 305, respectively.

The economic output (printout for station 1030 is page 3 of Exhibit 2) begins with a printout of control codes and includes (1) a listing of data input (ECONOMIC DATA FOR STATION 1030 PLAN 1) which includes exceedance frequency in events per year, peak flow and damages, (2) computation of expected annual damages (FLOOD DAMAGES FOR STATION 1030 PLAN 1) which includes allocation of probability intervals (PROB INT) to the range of flood events (FLOW) and incremental computed damage contribution to expected annual damages (SUM, TYPE 1, etc.) that are based on the product of PROB INT and damage associated with FLOW, and (3) the same information for the alternative plan. If the alternative plan had reduced annual damages, then the benefits (AVG ANN BFT) would be positive and equal to the difference between PLAN 1 and PLAN 2.

FLOOD CONTROL MEASURE OPTIMIZATION

The information required in addition to the hydrologic model and multi-plan economic data for flood control measure optimization are the performance parameters and cost relationships for the flood control features being considered. The mathematical structure for the optimization and the search strategy are discussed in detail in reference 3. It should be remembered (or understood) that economic optimum is achieved when the facilities are sized such that the computed difference between expected annual benefits and expected annual costs is maximized. The solution may proceed unconstrained or it can be constrained such that a minimum hydrologic performance at specified control points must be accomplished simultaneously with the net benefit maximization.

The general technique used is to successively operate the multi-plan simulation in a controlled fashion while automatically adjusting component sizes toward optimum.

SIZING RESERVOIR AND PUMPING PLANT — UNCONSTRAINED

The first optimization example will be the determination of the optimum (economic) sizes for a reservoir located at station 10 and a pumping plant to be located at station 30 that discharges through (or over) the levee. There is no minimum constraining hydrologic performance required. Information must therefore be assembled and coded that will describe, in a general way, the cost and performance of the storage reservoir and a pumping facility.

a. Detention Storage. — The detention storage reservoirs that may be considered with HEC-1 are those for which it is possible to define the operating characteristics as unique functions of the storage contents within the reservoirs. A reservoir with an uncontrolled outlet works exactly meets this requirement. To provide capability for automatic adjustment of operating characteristics (as is required for automatic optimization), a reservoir is characterized by (1) the outflow characteristics of a low level outlet, which is defined by the centerline elevation of the outlet and an orifice equation of the form:

where

C = orifice discharge coefficient

A = outlet area

H = head on low level outlet

g = acceleration of gravity

EXP = exponent dependent on tailwater conditions, 0.5 if no tailwater

and (2) the overflow characteristics of a spillway which is defined by a weir equation of the form:

$$Q = C_*LH_*^{3/2}$$
....(2)

where

C* = weir discharge coefficient

L = length of spillway

 H_* = head on spillway

and (3) the site storage characteristics which are defined by an elevation-storage capacity relationship. For an <u>index storage</u> to be optimized, which is the <u>storage at the elevation of the spillway crest</u>, the above relationships are merged to define the reservoir's outflow as a function of the storage level in the reservoir (Modified Puls method of routing).

Two modes are possible for a reservoir optimization. In the usual mode (for our example) a reservoir that can be characterized by a low level outlet and an overflow weir as described above will be automatically adjusted in its index storage capacity, along with all other system components, to achieve the minimum value of the objective function (defined in reference 3). The alternative mode, not illustrated, permits optimization of the size of the low level outlet assuming the reservoir does not spill, which is appropriate for pondage in low lying areas.

The cost relationships for the reservoir in the usual mode consists of a capital cost function and an associated capital recovery factor for converting the capital cost to annual cost, and the annual cost of operation, maintenance and replacement expressed as a proportion of capital cost. The capital cost function includes land acquisition and construction costs, interest during construction, etc., expressed as a function of the index storage size of the reservoir. The capital cost for a specific reservoir size being evaluated during optimization is interpolated from this function and the equivalent annual cost is computed as the product of the capital cost and the capital recovery factor for the appropriate discount rate. The annual cost of operation, maintenance and replacement is the product of the annual cost of operation and the interpolated capital cost. The total annual cost of the reservoir is the sum of these two costs. Table 3 (Appendix A) contains the data describing the performance and cost of the proposed reservoir.

Pumping Plant — A pumping facility removes volume from the system at a rate equal to the pumping capacity. The performance characteristics of a pumping plant are defined by an initial threshold water level at which the pump is activated and the discharge capacity of the pumping facility. In this analysis, it is assumed that water pumped from the system does not later appear at other locations in the system. The cost of a pumping facility is computed from a capital cost function and an associated capital recovery factor for converting to equivalent annual cost, the annual operation, maintenance and replacement cost that is a proportion of the capital cost, and the annual power cost. The power cost is adjusted if the volume to be pumped changes as the system components sizes are being optimized. It can be demonstrated that no matter the pumping capacity, the power costs would not materially change if the volume to be pumped does not change. The annual power costs are therefore adjusted only for water that is removed from the system by diversions or other pumping facilities. The annual cost is the sum of the equivalent annual cost, annual operation and maintenance cost, and annual power cost. Table 4 (Appendix A) contains the data describing the performance and cost of the proposed pumping plant.

The coding requires initial estimates for the facility sizes (starting values) and a number of control codes to indicate location and type of facility to be sized. The starting values selected were 10,000 ac.ft. and 4,000 cfs for the reservoir and pumping plant, respectively. Exhibit 3, pages 1 and 2, are a listing of the input data for this example including notations of revisions and additions to the data required for the multi-plan evaluation example.

Exhibit 3, pages 3 - 43, are reproductions of the complete output from the optimization run. The output of an optimization run includes:

- 1. The derived optimum size for each facility in the system included in the optimization (page 43).
- Complete hydrologic simulation of the system with and without the optimally sized facilities for the range of floods processed (nine for this example) (pages 6 - 42).
- 3. Economic expected annual damage analysis with and without the optimally sized facilities for each damage center in the system (pages 17, 24 and 41).
- 4. Costs for the derived system facilities (pages 11 and 40).
- 5. A summary of system cost, performance and net benefits (page 42).

The derived optimum sizes are 9,119 ac.ft. for the reservoir and 2,885 cfs for the pumping plant (summary page 43). The total capital cost is \$7,497,000 and system annual net benefits are \$173,000 (benefit cost ratio of 1.26). The derived values were adjusted from the starting values of 10,000 ac.ft. and 4,000 cfs which corresponded to a capital cost of \$8,740,000 and system net benefits of 158,000 (page 43). It is necessary, in each case, to test for possible local optima in the search procedure. This was accomplished by making a separate run with starting values of 3,000 ac.ft. and 500 cfs respectively. The derived sizes were 6,584 ac.ft. and 2,835 cfs costing \$6,591,000 and resulting in annual system net benefits of \$199.000. The results indicated that a local optimum did exist such that additional runs were made with different initial values until it could be reasonably concluded that the proper sizes were 6,584 ac.ft. for the reservoir and 2,835 cfs for the pumping plant.

The hydrologic performance can be characterized by the "degree of protection" provided, i.e., the exceedence frequency of the threshold of damaging flow. At damage center 1030, the zero damage exceedence frequency was reduced from about the 5 times per year event to about the annual event (deduced from page 17 and the additional runs made). Note that damages at station 1030 are quite small in relation to those at 305 and therefore probably had very little influence on the determination of the optimum sizes.

At damage center 305, the frequency of significant damages was reduced from about the 3-year exceedence interval event to about the 10-year event, which incidentally reduced expected annual damages by more than half.

Detailed study of the output can provide insight into the optimization methodology as well as the sensitivity of the system performance to a range of facility sizes. Pages 3 through 6 of Exhibit 3 contain detailed output on the progress of the optimization. The variables for optimization printed on page 3 are defined below and a review of the search procedure (reference 3) and the corresponding results from the output are described.

Variable Definition

NC = Counter denoting stage in search cycle (1-3)

M = Variable that is being adjusted for this cycle (corresponds to fields on J2 card listed above as SYSTEM OPTIMIZATION)

M1 = Next variable to be adjusted (optimized)

VAR(M) = Current value of variable M

VAR(M1) = Current value of variable M1

OBJ DEV = Used in connection with hydrologic performance constraint; described in example in next section

TANCST = Total annual cost of facilities at current values

ANDMG = Total annual damage for all damage centers for facilities at current values

O FTN(NC) = Objective function that is being minimized; in this example it is the sum of TANCST and ANDMG

Search Procedure (see reference 3)

(1) First, trial sizes of all system components are nominated and the entire system is simulated in all of its hydrologic, costs, and economic detail to calculate the value of the objective function, which for unconstrained optimization is the sum of the equivalent annual cost (TANCST) and annual damage (ANDMG).

The first value (NC=1) of the objective function is 1018.883

(2) Then the size of one component is decreased by a small selected amount (1 percent) and the simulation is repeated for the entire system to compute a new value of the objective function. This is repeated again resulting in three unique values of the objective function for small changes in the size of one component.

The values of the variable and objective function are

NC	VAR(M)	O FTN(NC)
1 f(X ₀)	10000	1018.883
2 f($X_0 - \Delta X$)	9900	1018.205
2 $f(X_O - \Delta X)$ 3 $f(X_O - 2\Delta X)$	9800	1017.645

(3) From these three values, an estimate is made of the component size that would result in the minimum value of the objective function. The computation of the adjustment is shown in Figure 2 and proceeds as follows:

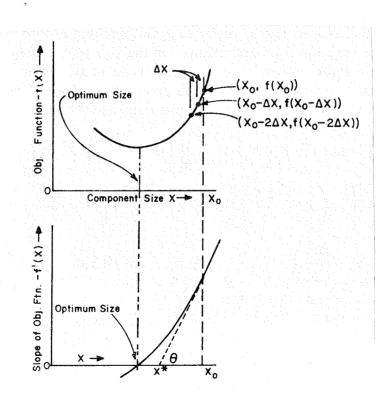


Figure 2.— Adjustment of Component Size by Newton-Raphson Convergence Procedure

$$f''\left(X_o - \frac{\Delta X}{2}\right) = \tan\theta = f'\left(X_o - \frac{\Delta X}{2}\right) \left[\left(X_o - \frac{\Delta X}{2}\right) - X^*\right]^{-1} \dots (3)$$

or
$$X^* = X_o - \left[f' \left(X_o - \frac{\Delta X}{2} \right) \right] \left[f'' \left(X_o - \frac{\Delta X}{2} \right) \right]^{-1} - \frac{\Delta X}{2} \dots \dots (4)$$

in which
$$f'\left(X_o - \frac{\Delta X}{2}\right) = [f(X_o) - f(X_o - \Delta X)](\Delta X)^{-1}$$
 (5)

$$f''\left(X_o - \frac{\Delta X}{2}\right) = [f(X_o - 2\Delta X) - 2f(X_o - \Delta X) + f(X_o)](\Delta X)^{-2}....(6)$$

and $\triangle X$ = incremental change in X; X = size of variable being optimized; X_O = present size of component X; and X* = projected "new" size for X. The calculation for adjustment of VAR(M) is as follows:

$$f'''(X_0 - \frac{\Delta X}{2}) = [1017.645 - 2(1018.205) + 1018.883]/\Delta X^2 ...(8)$$

$$X_0 = 10000; \Delta X = (.01) (10000) = 100$$

$$X^* = 10000 - \frac{0.678/100}{.118/(100)^2} - \frac{100}{2} = 9380.$$
 (to closest 10) . . .(9)

(4) After adjustment of the size of the system component, the entire system is simulated again in detail to compute the new value of the objective function and, provided the objective function has decreased, the procedure then moves to the second system component whose scale is to be optimized.

The output at this stage reads:

VAR 1 ADJ FROM 10000. to 9384.07

and one cycle for one variable has been completed.

(5) The above procedure is repeated for the second and all subsequent components to be optimized.

Note that the same procedure is repeated for variable 9.

- (6) A single adjustment has now been made for each component for one complete search of the system component sizes. The procedure is then repeated for two more complete system searches.
- (7) The component whose change contributed the most to decreasing the objective function is adjusted next before another complete system search is performed.
- (8) The procedure is terminated when either no more improvement in the objective function can be made (within a tolerance) for the component making the greatest contribution to decreasing the objective function, or the complete search cycle is completed.

Note that occasionally no successful adjustment can be made. If the computed adjustment does not reduce the objective function, its value is successively reduced to the original value, testing for improvement at a number of steps (pages 5 and 6 of Exhibit 3).

The remaining output should be self-explanatory. Remember the output is for two plans (existing and the derived system) for nine flood events which results in 18 hydrologic simulations at each control point and two economic evaluations at all damage centers.

SIZING RESERVOIR AND PUMPING PLANT — HYDROLOGIC PERFORMANCE CONSTRAINED

The objective for this example is to determine the size of the facilities that will maximize the system net benefits while simultaneously meeting hydrologic performance targets expressed in terms of desired flow (storage) target and corresponding exceedence frequency. This example extends the previous example for the performance targets of

Reach	Target Value	Exceedence Frequency (Events per Year)
1030 305	1200 cfs 5000 ac.ft.	1.0

The starting values were selected as 5000 ac.ft. and 5000 cfs, respectively.

Pages 1 and 2 of Exhibit 4 contain a listing of the input data with notations on coding revised and added. Pages 3 through 28 contain printout of selected pages of the output.

The derived optimum sizes are 7528 ac.ft. for the reservoir and 6044 cfs for the pumping plant (summary page 28). The total capital cost is \$9,889,000 and system annual net benefits are \$123,000 (benefit cost ratio

of 1.15). The derived values were adjusted from starting values of 5000 ac.ft. and 5000 cfs, respectively. The sensitivity of the solution to starting values was tested by making a separate run with starting values of 10,000 ac.ft. and 7000 cfs, respectively. The derived sizes were 6,007 ac.ft. and 6,570 cfs costing \$9,832,000 and resulting in annual net benefits of \$102,000. The hydrologic performance specified is achieved in that the degree of protection provided is 1.0 years (protection against the annual event) for reach 1030 and .05 (protection against the 20-year event) for reach 305 (see pages 15 and 26 of Exhibit 4).

Property of the

The output detailing the progress of the optimization contains additional information related to the performance target constraints. The additional variables are (page 3, Exhibit 4):

Variable Definition

ISTA = Station where performance target specified

INT FLOW = Flow corresponding to the target exceedence frequency for the current values of the variables

TRG FLOW = Target flow for the target exceedence frequency

FLW OBJ = Component of penalty applied to objective function because of failure to meet target (illustrated later) for this station

FLW DEV = Difference between INT FLW and TRG FLW

OBJ DEV = Penalty applied to objective function because of failure to meet target (multiply)

The additional printout occurs for all stations where performance targets are specified (as many as desired). The optimization proceeds exactly as the previous (unconstrained) example except that the objective function is penalized whenever the performance targets are not met. Note that the first objective function is extremely large (.951E+06) because of the large penalty from not meeting the target for station 305 while the objective function when optimization is complete (page 10, Exhibit 4) essentially has no penalty (.106E+04). The computation of a value of the objective function for the condition blocked out on page 5 (Exhibit 4) will illustrate the role of the penalty assessment. See reference 3 for a description of the objective function.

FLW OBJ = $[(FLW DEV)/(.10 TRG FLOW)]^4$

Station 1030

FLW OBJ =
$$\left(\frac{12.670}{120}\right)^4 = .0001$$

Station 305

FLW OBJ =
$$\left(\frac{782.138}{500}\right)^4 = 5.988$$

Objective Function Assessment

OBJ DEV = .0001 + 5.988 = 5.988

O FTN(NC) = (TANCST + ANDMG) (OBJ DEV + 1)

0 FTN(NC) = (774.217 + 265.434) (5.988 + 1) = 7264.80

The printout at the bottom of the pages on which economic output is shown (page 15 for example) summarizes the performance target and final regulated values.

SIZING RESERVOIR, PUMPING PLANT AND DIVERSION

A proposal offered at past public meetings has been to divert a portion of the runoff from subbasin 20 at station 20 into the adjacent watershed (which is presently undeveloped) both to reduce flooding in the downstream reaches and increase wetlands in the adjacent watershed to improve wildlife habitat. This example extends the previous reservoir and pumping plant example (unconstrained) to include a diversion from station 20.

A diversion transfers flow between locations within the system. The performance characteristics are defined by a threshold flow and a diversion capacity. The concept of the diversion relationship is indicated in figure 3. Water diverted may be returned to the system at any downstream location so that it is possible to characterize facilities which would bypass a portion of flood flows around a damage center. Flow may also be permanently diverted from the system, which will be done for this example. The cost is characterized similar to a pumping plant by a capital cost function, a capital recovery factor and annual operation, maintenance and replacement factor.

Table 5 (Appendix A) summarizes the performance and cost data for the proposed diversion.

The coding to include a diversion at station 20 is noted on the listing of input data, pages 1 and 2 of Exhibit 5. Note that it was necessary to include a dummy reservoir at station 20 in order to accommodate the requirements for a diversion.

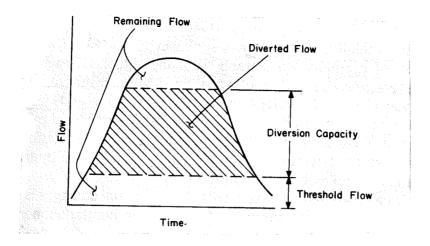


Figure 3. — Effect of Diversion on Flood Hydrograph

Pages 3 through 34 of Exhibit 5 contain selected pages of the output. The derived optimum sizes are 6620 ac.ft. (index storage) for the reservoir, 863 cfs for the diversion and 2250 cfs for the pumping plant (summary page 34). The total capital cost is \$7,099,000 and system net benefits are \$197,000 (benefit cost ratio of 1.33). The derived values were adjusted from starting values of 4000 ac.ft., 500 cfs and 1000 cfs, respectively, for the reservoir, diversion, and pumping plant. The sensitivity of the solution to starting values was tested by making a separate run with new starting values of 10,000 ac.ft., 3000 cfs and 4000 cfs, respectively. The derived sizes were 6648 ac.ft., 1393 cfs and 2160 cfs, respectively, costing \$7,617,000 and resulting in annual net benefits of \$167,000. In comparison with the previously derived values, it appears the diversion should be the smaller size. Additional runs demonstrate the value of testing a few starting values in an effort to locate a reasonable optimum.

The hydrologic performance of the derived system can be characterized by the degree of protection provided, i.e., the exceedence frequency of the threshold of damaging flows. At control point 1030, the 0 damage exceedence frequency was reduced from about the five times per year event to about the annual event (about the same as the example without the diversion). At control point 2030, the 0 damage exceedence frequency was not materially changed from the five times per year event. At control point 305, the frequency of significant damage was reduced from about the 3-year exceedence interval event to between the 10 and 15-year events. The residual damages for the system are reduced to about 1/3 of the damages under existing conditions.

SIZING LOCAL PROTECTION PROJECTS

Local protection projects include levees, floodwalls and channel modifications. Ignoring for the moment natural valley storage effects, the hydrologic and economic effects of local projects are truly local,

i.e., do not interact with the system hydrology. If this is the case, and it will be unless the modification is extensive, then a local project can be completely characterized performance-wise by a design Q (or storage) and a flow (or storage) damage function. Damages are usually negligible below the design flow and follow a curve related to the local site hydraulics and damage potential above this point. A levee or floodwall essentially truncates the damage function below the design flow (basic hydraulic-economic relationship unchanged) while channel modifications lower the relationship in response to the improved conveyance characteristics.

The concept embodied in HEC-1 is that a design flow is associated with a unique damage relationship and therefore if the range of feasible design flows are known, the relationship for a specific design flow within the feasible range could be determined. The relationship (flow or storage-damage) for a specific design flow is determined by interpolating between the relationships defining the feasible range are termed "pattern functions;" the minimum design damage function corresponding to the design flow considered the lowest value feasible and the maximum design damage function corresponding to the design flow considered the highest value feasible.

The local projects considered for this example are a channel modification for reach 1030 and a levee for reach 2030. The pattern damage functions for reach 1030 were developed from water surface profile and economic The minimum design damage function corresponds to a "clear and snag" alternative and was constructed by computing water surface profiles for a smoothed boundary to develop a rating curve at the index station that was subsequently combined with an area, elevation, damage relationship. The design flow associated with this function is 1700 cfs, the lower limit of design flow. The maximum design function corresponds to a 40 ft. bottom width, 2 to 1 side slope channel enlargement and was constructed by computing water surface profiles for modified hydraulic geometry to develop a rating curve that was subsequently combined with an area, elevation, damage relationship. The design flow associated with this function is 8300 cfs, the upper limit of design flow for the enlarged channel. Table 6 (Appendix A) summarizes the performance and cost data for the proposed channel modification for reach 1030. Table 6 also contains a generated damage function for a specific design flow to illustrate the interpolation concept.

The upper and lower pattern damage functions for reach 2030 are the same and correspond to existing conditions. The reason for the correspondence is that the effect of a levee is primarily to truncate the function at the design flow. Some change is possible for various designs if the flow area is greatly restricted by the levees. The example assumes no significant conveyance change from the levees, though the methodology does not require the assumption. Table 7 (Appendix A) summarizes the cost and performance data for the proposed levee reach.

The existing conditions damage relationships, cost and runoff hydrology for reaches 1030 and 2030 have been purposefully made the same so that

the methodology developed for handling local projects can be easily observed. The example contains only local projects (other damage centers and alternatives removed) so that the difference in the derived sizes of the two alternatives should only be due to differences in their performance, i.e., modified damage relationships. A listing of the input data for this example is contained on pages 1 and 2 of Exhibit 6.

Pages 3 through 15 of Exhibit 6 contain <u>selected</u> pages of the output of the optimization run.

The derived optimum sizes are about 5000 cfs design flow for both the channel modification reach and the levee reach. This amounts to about a 0.7 exceedence frequency degree of protection. The total capital cost is \$207,000 and system annual net benefits of \$30,000. The derived values were adjusted from starting values of 2000 cfs design flow for each facility. It is interesting to note that while both facilities began and ended with the same values, the adjustment route to the optimum was different. There was no requirement that they both end up the same size (see pages 3 through 5 of Exhibit 6). In addition, note that while the values derived were the same, the net benefits were different because the damage relationships were quite different. The channel modification cost \$104,000 and had average annual benefits of 27,000 for annual net benefits of \$19,000 (benefit cost ratio of approximately 3.4). The levee cost \$103,000 and had average annual benefits of \$19,000 for annual net benefits of \$11,000 (benefit cost ratio of approximately 2.4).

SIZING RESERVOIR, PUMPING PLANT, DIVERSION, AND UNIFORM PROTECTION LOCAL PROJECTS

This final example includes all the proposed components that have been previously illustrated. The optimization will be unconstrained and the uniform protection level option for the local projects will be used. The uniform protection level option will in effect cause a "degree of protection" to be optimized for the two local protection projects. A complete listing of the input data is contained on pages 1 through 3 of Exhibit 7 and the complete output on pages 4 through 39.

The derived optimum sizes are 6701 ac.ft. for the reservoir, 0.2 exceedence frequency for the levee and channel projects (2947 cfs for the channel modification and 7660 cfs for the levee), 670 cfs for the diversion and 2450 cfs for the pumping plant for a total capital cost of \$7,408,000 and system net benefits of \$196,000 (benefit cost ratio of 1.31). The optimum sizes were adjusted from starting values of 4000 ac.ft. for the reservoir, 0.2 exceedence frequency (uniform protection) for local projects, 500 cfs for the diversion and 1000 cfs for the pumping plant. A comparison of Exhibits 5 and 7 indicates that the inclusion of local projects has very little effect on the optimum sizes of the major facilities (reservoir and pumping plant). The diversion capacity was lowered slightly from that derived in Exhibit 5 which probably means that it is more efficient to protect reach 2030 by the levee project.

OBJECTIVE OF THE FLOOD CONTROL SYSTEM COMPONENT OPTIMIZATION UTILIZING HEC-1

The optimization algorithm (or search procedure) discussed in this training document has been developed to assist the planner in systematically and efficiently screening a large number of possible flood control alternatives. Although there is an upper limit to the number which can be satisfactorily and economically optimized in one particular computer run, it is still possible to analyze a large number of components by grouping. In the Phoenix Urban Study, Los Angeles District Corps of Engineers (reference 6), there were eight upstream storage alternatives to be evaluated. Although each component was analyzed individually, it was possible to determine which component and combination of components were economically feasible by making several runs in groups of two and three components and comparing the economic and hydrologic consequences.

It should be emphasized that the optimization procedure of HEC-1 is a planning tool for determining potential and economically feasible flood control alternatives. Once those that have potential are selected, then a more detailed simulation of the operational and hydraulic characteristics of a particular component will probably be required as various stages of study (leading to design) are undertaken.

REFERENCES

- 1. <u>HEC-1, Flood Hydrograph Package</u>, Users Manual, U.S. Army Corps of Engineers, The Hydrologic Engineering Center, Davis, California, January 1973.
- Input Data Description, Addendum 6 to HEC-1 Users Manual, September 1974.
- 3. Davis, Darryl W., "Optimal Sizing of Urban Flood Control Systems," Technical Paper No. 42, U.S. Army Corps of Engineers, The Hydrologic Engineering Center, Davis, California, March 1974.
- 4. Optimization Model for the Design of Urban Flood-Control Systems, Technical Report CRWR-141, Center for Research in Water Resources, College of Engineering, University of Texas, Austin, Texas, November 1976.
- 5. Expected Annual Flood Damage Computation, Users Manual, U.S. Army Corps of Engineers, The Hydrologic Engineering Center, Davis, California, June 1977.
- 6. <u>Interagency Task Force on Orme Dam Alternatives</u>, Preliminary Flood Control Summary Report, Phoenix Urban Study, Los Angeles District, U.S. Army Corps of Engineers, Los Angeles, California, September 1977.

APPENDIX A

INPUT DATA

1,

TABLE 1
HYDROLOGIC DATA
(Existing Conditions)

DRAINAGE AREA

Subbasin	Area <u>(square miles)</u>
10 20	35.1 35.1
30	TOTAL 10.0 80.2

SUBBASIN RUNOFF SYNTHETIC STORM EVENT (hourly values)

	ow to O (cfs)		flow to 20 (cfs)		flow to 30 (cfs)
24	2200	24	2200	8	730
24	1840	24	1840	8	615
26	1540	26	1540	9	515
33	1250	33	1250	11	415
50	995	50	995	17	330
85	775	85	775	28	255
190	605	190	605	63	200
375	470	375	470	125	155
515	365	515	365	170	120
590	280	590	280	195	93
660	215	660	215	220	72
710	160	710	160	230	54
760	120	760	120	255	41
800	95	800	95	265	32
840	77	840	77	280	26
910	66	910	66	305	22
1040	59	1040	59	350	20
1290	53	1290	53	430	18
1920	49	1920	49	640	16
3000	42	3000	42	1000	14
3950 4600 5080 5360 5370	40 38 35 33 30	3950 4600 5080 5360 5370	40 38 35 33 30	1320 1540 1650 1800 1810	13 12 11 11
5100 4600 3980 3330 2720	30 29 27 25 25	5100 4600 3980 3330 2720	30 29 27 25 25	1690 1530 1330 1110 900	10 10 9 9

TABLE 1 (Continued)

HYDROLOGIC DATA (Existing Conditions)

Reach 10-30 Mod. Pul	s Rout	ing Crit	eria ^l				
Storage (ac.ft.)	0	50	475	940	2135	3080	6300
Outflow (cfs)		200	1020	2050	6100	10250	24000
Reach 20-30 Mod Puls	Routi	ng Crite	ria ¹				
Storage (ac.ft.)	0	50	475	940	2135	3080	6300
Outflow (cfs)	0	200	1020	2050	6100	10250	24000

Outflow Culvert (Sta. 30	Mod.	Puls Routing	<u>Criteria</u>
Storage (ac.ft. Outflow (cfs)) 0	40 120		

Storage-outflow data should extend beyond the maximum values computed in the multiflood-multiplan options.

Note that the outflow becomes constant and equal to 1200 cubic feet per second when the detention storage equals or exceeds 400 acre feet.

TABLE 2
ECONOMIC DAMAGE-FREQUENCY DATA
(Existing Conditions)

Damage Center 1030

Exceedence Frequency (Events per Yr)	Flow (cfs)	Type 1 Damage (\$1000)	Type 2 Damage (\$1000)	Type 3 Damage (\$1000)
6.000	1030	0.00	0.00	0.00
5.500	1130	0.00	0.00	0.00
4.500	1380	0.10	0.50	1.00
3.500	1740	0.20	0.70	1.50
2.500	2280	0.30	1.50	3.20
1.500	3200	0.30	2.20	4.70
.900	4220	0.40	2.90	6.50
.700	4800	0.50	3.50	7.80
.500	5620	0.60	4.00	9.30
.350	6480	0.70	4.70	11.00
.250	7340	0.80	5.80	13.70
.150	8540	0.90	6.60	15.60
.100	10000	1.00	8.00	19.00
.050	12100	1.20	10.30	23.00
.020	15100	1.50	15.00	27.80
.005	21000	1.80	18.10	30.20

Damage Center 2030

Exceedence Frequency (Events per Yr)	Flow (cfs)	Type 1 Damage (\$1000)
6.000	1030	0.00
5.500	1130	0.00
4.500	1380	1.60
3.500	1740	2.40
2.500	2280	5.00
1.500	3200	7.20
.900	4220	9.80
.700	4800	11.80
.500	5620	13.90
.350	6480	16.40
.250	7340	20.30
.150	8540	23.10
.100	10000	28.00
.050	12100	34.50
.020	15100	44.30
.005	21000	50.10

TABLE 2 (Continued) ECONOMIC DAMAGE-FREQUENCY DATA (Existing Conditions)

Damage Center 305

Exceedence Frequency (Events per yr)	Storage (ac-ft)	Type 1 Damage (\$1000)	Type 2 Damage (\$1000)
.700	1500	0.00	0.00
.600	2300	37.50	10.50
.450	4000	75.00	15.00
.250	7000	1125.00	52.50
.100	12500	3150.00	105.00
.050	20000	5850.00	202.50
.020	28000	7050.00	300.00
.010	37000	9000.00	390.00
.005	50000	10650.00	540.00
.002	76000	11250.00	585.00

Flood Ratios for Multiflood, Multiplan Evaluation

0.25 0.30 0.50 0.70 1.00 1.50 2.20 3.25 4.40

Note that the damage-frequency relationship (for damage center 305) is a function of storage and <u>not</u> discharge.

TABLE 3 RESERVOIR PERFORMANCE AND COST DATA

Low Level Outlet

Area of Opening = 35 ft²
Orfice Coefficient, C,
 in the general expression

Q= C A (2gH)^{Exp.}
 (free discharge) = 0.71
Cenderline Elevation of Orfice = 975 ft
No Tailwater (no submergence)
 Exponent of head (Exp.) = 0.5

Overflow Spillway

Type = Ogee Length = 35 ft Weir Coefficient, C, in the general expression Q= C L H^{3/2} = 2.86

Cost and Site Characteristics 1

Capacity (ac.ft.)	0	2500	4000	5200	6800	9000	11500	15500	21000	30000
Elevation (ft)	965	1000	1015	1030	1045	1060	1075	1090	1105	1120
Cost (\$1000)	0	1500	2400	3000	3600	4350	4950	5550	6000	7200

Annual Cost Data

Annual Operation and Maintenance = 2.3% of Capital Cost Discount Factor (Capital Recovery) = 5.04%

Constraints

Reservoir size must be in range of 0 to 25,000 ac.ft.

Capacity-elevation data should extend beyond the maximum values computed in the multiflood-multiplan options and the maximum reservoir size designated.

TABLE 4 PUMPING PLANT PERFORMANCE AND COST DATA

Cost and Performance Data

Capacity (cfs)	0	250	500	1000	2000	6000	8000	10000
Cost (\$1000)				1600	2300	6000	7860	8670

Annual Cost Data

Annual Operation and Maintenance = 2.3% of Capital Cost Discount Factor (Capital Recovery) = 5.04%Annual Power Cost = \$100,000

Sizing and Operation Data

Pumping plant must be between 0 and 10,000 cfs.
Pumps activate at storage level (at station 30) = 1500 ac.ft.

Annual power cost is adjusted based on the difference in computed volumes at the pumping facility as system component sizes vary from specified initial values to optimized values

TABLE 5 DIVERSION PERFORMANCE AND COST DATA

Performance and Cost Data

Capacity (cfs) 0 1250 2500 3750 5000 7500 10000 15000 20000 Cost (\$1000) 0 1500 2600 3400 4200 5200 6100 7500 8300

Annual Cost Data

Annual Operation and Maintenance = 1.5% of Capital Cost Discount Factor (Capital Recovery) = 5.04%

Operation and Constraints

Diversion activation threshold = 1,500 cfs Size limit between 0 and 20,000 cfs

TABLE 6 CHANNEL MODIFICATION COST AND PERFORMANCE DATA

r

Damage Center 1030

Function	Type 3 Damage (\$1000)	0000	0.00	2.69 4.41 6.89 8.11	11.44 15.01 20.02 23.41
Interpolated Damage Function Design Q = 4830cfs	Type 2 Damage (\$1000)	0.00	0.00 0.00 0.00 0.38	1.15 1.70 2.63 3.36	4.88 6.71 9.79 12.99
Interpola Desig	Type 1 Damage (\$1000)	00000	0.00 0.00 0.00 0.00	0.20 0.29 0.36	0.63 0.81 1.06 1.40
	Flow (cfs)	1030 1130 1380 1740	2280 3200 4825 4830	5620 6480 7340 8540	10000 12100 15100 21000
Function fs	Type 3 Damage (\$1000)	00000	0.0000	0.00 0.00 0.44	3.50 7.15 12.29 16.86
Maximum Design Damage Function Design Q = 8300cfs	Type 2 Damage (\$1000)	00000	0.00	0.00 0.00 0.25	1.75 3.18 5.04 7.98
Maximum D Desi	Type 1 Damage (\$1000)	0.00	00.00	0.00	0.25 0.42 0.64 0.99
e Function ofs	Type 3 Damage (\$1000)	0.00	1.73 3.44 5.85 7.23	8.91 10.63 13.11	18.61 22.09 27.00 29.32
Minimum Design Damage Function Design Q = 1700cfs	Type 2 Damage (\$1000)	00.00	0.95 1.73 2.53 2.73	3,53 4,08 5,01 6,16	7.70 9.90 14.08
Minimum D Desi	Type l Damage (\$1000)	0.00 0.00 0.00 0.01	0.14 0.25 0.36 0.43	0.53 0.62 0.69 0.82	0.97 1.17 1.43
	Flow (cfs)	1030 1130 1380 1740	2280 3200 4220 4800	5620 6480 7340 8540	10000 12100 15100 21000

1/ In the interpolation scheme zero damages are estimated to occur at a peak flow which is 99.9 percent of the design flow.

TABLE 6 (Continued) CHANNEL MODIFICATION COST AND PERFORMANCE DATA

Performance and Cost Data

Capacity (cfs)	1700	5000	5500	700 0	8300	9300
Cost (\$1000)	42	103	149	222	283	340

Annual Cost Data

Annual Operation and Maintenance = 2.3% of Capital Cost Discount Factor (Capital Recovery) = 5.04 %

Design Limits

Minimum Design Q = 1700 cfs Maximum Design Q = 8300 cfs

TABLE 7

LEVEE COST AND PERFORMANCE DATA

Damage Center 2030

Flow (cfs)		nimum Desi mage Funct Damage (\$1000)			Maximum De Damage Fund Damage (\$1000	ction
1030 1130 1380 1740		0.00 0.00 1.60 2.40			0.00 0.00 1.60 2.40	
2280 3200 4220 4800		5.00 7.20 9.80 11.80			5.00 7.20 9.80 11.80	
5620 6480 7340 8540		13.90 16.40 20.30 23.10			13.90 16.40 20.30 23.10	
10000 12100 15100 21000		28.00 34.50 44.30 50.10			28.00 34.50 44.30 50.10	
Performance and Cost Data Capacity (cfs) Cost (\$1000)	1700 42	5000 103	5500 149	7000 222	8300 283	9300 340

Annual Cost Data

Annual Operation and Maintenance = 2.3% of Capital Cost Discount Factor (Captial Recovery) = 5.04%

Design Limits

Minimum design Q = 1700 cfs

Maximum design Q = 8300 cfs

EXHIBIT 1

HYDROLOGIC MODEL

(Existing Conditions)

								400
24 25.1 70 760 800 840 910 1040 1290 5000 5060 5360 5370 5100 4600 3580 840 910 1040 1290 3580 120 120 120 120 120 120 120 120 120 12		RESERVOI	NFLO					
710 760 800 800 900 1040 1290 571 160 5060 5360 5370 5100 4600 3289 600 5360 5370 5100 4600 3289 53 30 30 30 29 29 29 20 30 30 30 30 30 30 30 30 30 30 30 30 30	Ī	35.	•					
600 5060 5360 5370 5100 4600 3670 605 605 605 605 605 605 605 605 605 60	v -	7 7	9.0	0 :	ю.	5	2	
640 1540 1250 995 775 6605 475 605 605 605 120 120 995 777 665 599 52 605 630 6300 6300 6300 6300 6300 6300 6	10	5 S	2 6	4 0	7 0	5 6	7 d	
160 120 95 77 66 29 5 38 35 30 29 29 38 35 30 30 29 29 30 475 940 2135 3080 6300 20 35,1 33 50 85 190 337 24 75 80 840 910 1040 137 20 5080 5360 5370 5100 4600 398 640 1540 1250 995 775 665 35 12 35 35 35 30 30 29 30 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 2600 1350 210 1550 1800 1810 1690 1550 210 1550 1800 1810 1690 1550 210 1550 1800 1810 1690 1550 210 1550 1800 1810 1690 1550 210 1550 1800 1810 1690 1550 210 1550 1800 1810 1690 1550 210 1550 1800 1810 1690 1550 210 1550 1800 1810 1690 1550 210 1650 1800 1810 1690 1550 210 1650 1000 1000 1000 1000 1000 1000 10	3	154	in the	00	? -	9	77	
38 35 33 30 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20	16	~ ~	0		- 6	3 15	- 15	
030 TIAL CHANNEL MODIFICATION REACH 50 475 940 2135 3080 6300 20 35,1 33 50 85 190 337 24 26 80 840 910 1040 129 640 540 1250 995 775 605 47 160 120 336 33 30 29 38 35 33 80 630 29 38 35 39 82 29 30 475 940 2135 3080 630 20 475 940 2135 3080 630 20 1020 2050 6100 10250 24000 30 475 940 2135 3080 630 20 1020 2050 6100 10250 24000 30 475 940 2135 3080 630 20 1020 2050 6100 10250 24000 30 415 30 30 30 30 30 30 30 30 30 30 30 30 30	-		33.	CY.		, o		
50 475 940 2135 3080 6300 200 1020 1020 200 2000 2000 2000 200	M+							
50 475 940 2135 3080 6300 200 200 1020 200 2000 2000 2000 2000	-	ב שליילו ב	4 1 1 CA	2	E,			
50 475 940 2135 3080 6300 200 1020 2050 6100 10250 24000 20 35,1 24 26 33 50 85 190 129 640 540 1250 975 775 665 180 120 95 77 665 180 120 95 77 665 180 180 180 10250 24000 20 475 940 2135 3080 6300 20 475 940 2135 3080 6300 20 475 940 2135 3080 6300 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 415 11 11 11 11 10 1530 21 180 1810 1690 1530 21 11 11 11 11 11 10 110						•		
200 1020 2050 6100 10250 24000 20	S	47	76	3	80	30		
20 35,1 33 50 85 190 375 710 760 800 840 910 1040 1290 640 5560 5360 5370 4600 5980 605 1540 1290 775 605 470 1290 3980 1290 1540 1290 995 775 605 470 1290 330 29 27 65 190 1290 1290 1290 1020 1020 2050 6100 10250 24000 1020 10250 24000 1020 10250 24000 1020 10250 24000 1020 10250 24000 1020 10250 24000 1255 265 265 260 1255 260 1255 260 1255 260 1255 260 1250 1250 1250 1250 1250 1250 1250 125	0	102	5	0	025	400		
24 55.1 27 66 800 840 910 1040 1290 5080 5360 5370 5100 4600 3990 640 1540 1250 995 775 605 470 150 120 595 77 66 59 33 30 27 36 470 11AL LEVEE AND/OR BYPASS REACH 50 475 940 2135 3080 6300 20 1020 2050 6100 10250 24000 20 1020 2050 6100 10250 24000 20 1020 1020 2050 6100 10250 24000 20 1020 1020 1800 1810 1690 1530 1555 54 41 55 26 25 26 25 20 1555 54 41 11 11 11 11 10 109								
24	i						1	
710 5780 800 840 910 1040 1290 6200 5540 5100 4600 39980 6400 1540 1250 4605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 475 605 415 515 415 515 415 110 110 110 110 110 110 110 110 110 1	N.	V.		•	x 0 ·	2	37	
000 5000 5350 5370 5100 4600 5980 160 150 955 955 955 955 955 955 955 955 955 9	7	-	6	7 1	<u>.</u>	70	5	
150 1510 995 775 605 47 160 1520 995 77 66 180 152 39 30 111AL LEVEE AND/OR BYPASS REACH 50 475 940 2135 3080 6300 30 1020 2050 6100 10250 24000 31 INFLOW TO FOREBAY POOL 17 28 63 12 8 9 11 17 28 63 13 84 15 25 265 260 305 350 43 84 1 32 265 200 1530 1530 153 84 11 11 11 11 10 1090 1530 153 84 11 32 26 22 20 854 41 32 26 22 20 854 41 11 11 11 10 1090 1530 153 854 41 32 26 22 20 855 11 11 11 11 11 10 10	0	0 . 0 .	5	2	91	9	00	~
100 160 59 59 77 66 59 59 30 30 30 29 29 20 30 30 30 29 29 20 30 30 30 29 29 20 30 30 30 30 30 30 30 30 30 30 30 30 30	0	124	5	0	-	0	~	
250 55 55 50 50 29 29 030 030 030 030 030 030 030 030 030 03	0 1	~ .	5 1	11		65		
TIAL LEVEE AND/OR BYPASS REACH 50 475 940 2135 3080 6300 200 1020 2050 6100 10250 24000 30 INFLOW TO FOREBAY POOL 8 9 11 17 28 63 18 230 255 265 280 305 350 540 1650 1800 1810 1690 1530 615 54 415 330 255 200 153 54 11 11 11 11 10 10	7 5		??) (∑ `		
50 475 940 2135 3080 6300 30 1020 2050 6100 10250 24000 31 INFLOW TO FOREBAY POOL 8 9 11 17 28 63 12 230 255 265 280 305 350 540 1650 1800 1810 1690 1530 615 54 41 32 26 20 153 54 11 11 11 10 10	2	L LEVEE AND	OR BYPA	SS REAC	-			
50 475 940 2135 3080 6300 30 1020 24000 30 1020 2450 6100 10250 24000 1 10250 24000 1 10250 24000 1 10250 24000 1 10250 24000 1 10250 250 1 10								
20	'n					•		
200 1000 2050 6100 10250 24000 30 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	n o	3 (3 1	_	000	630		
INFLOW TO FOREBAY POOL. 8	○ M	2 01		2	0.25	00		
10.0 8 9 11 17 28 63 12 530 255 265 280 305 350 43 540 1650 1800 1810 1690 1530 133 615 515 415 330 255 200 15 54 41 32 26 22 20 12 11 11 11 11 10 10	AL IN	FLOW TO FOR	BAY PUD					
8 9 11 17 28 63 12 230 230 25 265 280 305 350 43 650 1650 1810 1690 1530 133 615 415 330 255 200 151 12 11 10 10 10 30 NED INFLUM TO FOREBAY POOL		10.						Ś
230 255 265 360 305 350 43 540 1650 1800 1810 1690 1530 133 615 515 415 330 255 200 15 54 41 32 26 22 20 12 11 11 11 10 10 30 NED INFLUM TO FOREBAY POOL				17	N	63	N	
540 1650 1800 1810 1690 1536 133 615 515 415 330 255 200 157 54 41 32 26 22 20 15 12 11 11 11 10 10 10 30 NED INFLUM TO FOREBAY POOL	2	S	2	28	30	35	-	
615 515 415 330 255 200 157 54 41 32 26 22 20 12 11 11 11 10 10 30 NED INFLUM TO FOREBAY POOL	⇒ .	165	80	8	9	53	10	31
54 41 32 26 22 20 1. 12 11 11 11 10 10 30 INFLUW TO FOREBAY POOL	-	5	-	1	Ġ.	0	in	
12 11 11 11 10 10 10 10 10 10 10 10 10 10	52	3	32	C	N	£	-	
30 NED INFLOW TO FOREBAY POOL	~	-	- 		<u>.</u> 01	10		
NED INFLOW TO FOREBAY POOL	30							
	발	INFLOW TO	OREBAY	0				
	₹11	OUTLET THRO		L.				
TY OUTLET THROUGH LEVE								
TY DUTLET THROUGH LEVEE	0	10000						
TY DUTLET THROUGH LEVE 1 400 100000	2	120						
TY DUTLET THROUGH LEVEE 400 100000 200 1200								

	•	5370. \$370.	10 5370, 5018, 24*HDUR 72*HDUN AREA 5370, 5018, 2635, 1158, 35*10 (152.06)(142.10)(74.53)(32.80)(90.91)	24-HOUR 2635, 74,63)(72-HOUR 1158.	35.10 90.91)
ROUTED 10	1030	4312.	4092, 115,87)(69,98)(1158.	35.10
HYDROGRAPH AT	ຂັ	5370,	5018,	2635,	1158.	35,10
ROUTED TO	2030	4312,	115.87)(2471.	1158.	35,10 90,91)
4	30 20	1810.	1670.	878,	386.	10.00
3-COMBINED	ž	10154.	271,25)(5772.	2701.	80.20
ROUTED TO	305	1200.	305 1200. 1200. 1200. 966. 80.20 (33.98)(33.98)(33.98)(33.98)(207.36)	33,98)(27,36)	80,20

EXHIBIT 2

MULTIFLOOD, MULTIPLAN MODEL (Economic Evaluation of Existing Conditions)

											LEGEND	AT AND TANDERS OF THE	N = NEW INFO! DAIN	R = REVISED INPUT DATA	()= REVISED INPHT DATA																								
				590	3000	02/2) (1) (1	4 W							£.		0279		۲.		~		0.1.			590	3000	2720	O (7 %	•						.35	•	6480
3	07.8		Θ	515	1920	3530	10	. W		•	9)				æ.		2620		•		0 •		?.		Θ	515	1920	3330		, w			(2)				īv.	•	5620
	3,25			375	0621	2400) H	7.2							•		008#		'n.		in.		°. `			375	1290	3980	2 Y	2.0									4800
	2,20			061	1040	2004 0004))	`				- 00 - 00 - 00 - 00	24000		•		0220		₹.		o. N	•	0			190	1040	4600	ტ ტე	n R				[00000)) 	•		4220
SNOILIGNO	1,50			82	0.0	2100) 4 -	38		Ŧ		0807	10250			5005	3400	21000	r.	9.	ณ ณ :		- a			95	910	0015	C / /	9 6		•				> ° ± > -		\$00	3200
DO BNILS	1.00			င်	840	0.27.U	7.7	. o		TION REA	9	2115	6100		5.2	20	0 V	15100	•	٠. •		: :	, to			20	078	5570	٠ ٢ ٢	30			Θ	1 · · ·	617	2212	ي. در	₹0.	2280
 ×3 10 2	0,70	R INFLOW		33	000	0000) #) 0	33		MODIFICATION REACH		076	2050	-	3.5		0 1 7 6 6	14100	~•	~: 	/• .	^ L	n =			M.	000	350	0 14 0 0 14	1 10		AND/UR BYPASS	-	0,70) 4 E O	>		.05	1740
VALUATIO	0.50	RESERVOIR	35.1	92	0 0 0 0 0 0 0 0	000C	120		_	CHANNEL		475	1020	n	2.4		000	0000	7	0.1	•) •	• 6		35.1	92	000	0000	2.70	, m	€	LEVEE AN		476	n c	> } >		٥.	1380
ECUNOMIC EVALUATION OF EXISTING CONDITIONS	or.	ENTIAL		72.	1,500	200	160	8		POTENTIAL		500	200	9-	5.V	-	000	0	0		>	0 <	5.6	ŝ		72.	017		04-) (II) pri		DTENTIAL		C U	200) .	5,5	• 15	1130
ر (ع) (ع)		0 PUT	•	≈.	000	7200	2.5	0.70		2		- 0	0	1030	•			036	0	œ (ه د س	2 <	13.7		7	7	000	0.00	2.0	3		04		(, c	2030	٥	. 25	1030

	LEGEND N = NEW INPUT DATA R = REVISED INPUT DATA ()= REVISED INPUT DATA			
	0000 0000 0000 0000		\$005 76000	5.85 5.85 5.85 5.85 6.50
o .	0000000	Э	\$000 \$000\$	100 8 00 8 00 8 00 8 00 8 00 8 00 8 00 8
e.	14 11 14 11 14 11 14 11 16 11		37000	00 00 00 00 00 00 00
в - •	# # # # # # # # # # # # # # # # # # #		28000	7050
50.1	M 40 M M 40 M M M M 10 0 M M M M		20000	2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
0 m	10L 1880 1810 1800 1100	. ⊖ 2	12500	 0.10
300	1820 1800 1800 1800 180) FOREBAY POOL OUGH LEVEE	7000	
.1 28.0 30	10.0 10.0	D INFLOW TO FOREBAY PO SOUTLET THROUGH LEVEE 10 100000 1200		\$ 5 5 5 5 5 5 5 5 5 5
301		CMBINED I 305 RAVITY GU 400 1200	23.60	N. 6.
or.o	11800081 11800081		1500 1500	0 0 0
23¥-	.E.S.S.S.S.X.	~ x ~ > ~ & ~ ;	>-~- 	

1LPR 0																																									
AANC81																																									
ADSCNT 0.00000																																									
COMPUTATIC IAGST 0																																									
DAMAGE DGPRT 0.000																																		.				•		_	
FL000 TRGT 0.	•	n 6			9 6	000	700	500	008	300	000	700	009	000	000	002.0			-	0		•		2.0	2 3	٠.	ा	21,97			TYPE	ŏ•0	•	e.	٠, ٠	 n =	ה ה	•	÷.	21.97	
D ANNUAL ISAME 1							. 7				=	-	<u>:</u>	-	ni i	30.	HIS DATA			0			_				.	10,02			LYPE 2	00.0	• 30	1.73	200		80.1		78.	10.02	
EXPECTE NDMG 3	•	J C	•	٠ ا		ູ່ປ	١,	.0	. "		. ` .	۰.	•	ີ	٠,	18.10	S FOR T			• 00	.07	07.			77.	80	20.	• 20	N			00•	.07	07.			 	50.0	20.	on.	
FL00		YPE		000.0	•			000	00.5	009	700	900	006	1.000	200	1.800	DAMAGE	PLAN	4									•	PLAN		4										
A P O P	1030	Ξ,	2 :	2 9	2 6	2 6	2 6		, ç			0.0	0.0	00	00	38	ANNUAL	1030	ā	00.0	86	8. 8.	99.9	7.73	, v	5.0	9	33,58	1030		SU	0.0	36.	80	9.9	/•/			99*	33,5	
181	STATION			~ .	0.5			3 60		• •	- 27	*	-	0	ഥ	50.10	AVERAGE	STATION	2 ← 2 × ←	28.5	152	776	0.72	765	- 4	0.37	D10	910	STATION		L N	798	752	,776	2/0	787	177	037	710.	DHG	
		A PEAK	1050	.0011	1200		•		4800	1000	0879	7340.	.0758	100001	12100.	21000.	40 TN	GES FOR		000	297	•	.769		하셨	. 1		VG ANN D	GES FOR	EXCD		000	297		169				900	VG ANN	
	۵	- F REG	000	200	- C) () () C	20) C	320	250	1.50	• 100	020	0.00 0.00 0.00	ADJUSTHE	DOD DAMA	30		39	076	921.	-	.0101	5177	20603		DOD DAMA		₽1 0™		139.	.000	251.	215		15177	20603		

	181A 2030	NFLOD 16	EXPECTED NOME IS	TED ANNUAL ISAME 1	FL000	DAMAGE DGPRT	COMPUTATION IAGGT A	10N ADSCNT	AANCST 0.00000	10 80 80
្ន	STATION 2	030								
P P A A X	SUM									
		0000								
		2.400								
		5.000								
		7.200								
		008.6								
		009.11								
		000								
		20.300								
		23.100								
		28,000								
		34.500								
		44.300								
.0005 21000.		50,100								
ADJUSTMENT OF A	AVERAGE ANN	ANNUAL DAMAGES	FOR	THIS DATA						
DAMAGES FUR	STATION	2030 PLAN								
2 C										
3 6 14 6 14 6			·							
0000			000							
~ -			0 - a							
1.769			, ,							
857			73							
.323			20.00							
560			. 70							
.050			50							
900*		99•	99•							
AVG ANN D	DMG 33	.58 33.	58							
		i	12.3							
	0.04 . 4.00 0.00	COSO FLAN	U							
		ALIA TVDC								
9	286									
5 46	752		200							
3.09	776		.81							
1.76	072		99							
4312 . 867	785	7.73	7.73							
, 32	391		54							
60.	136		• 70							
.02	037		. 50							
ê.	014		99.		\.\.					
AVG ANN D	DMG 33	.58 33.	58							

A P P P P P P P P P P P P P P P P P P P

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLANGRATIO ECONOMIC COMPUTATIONS FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)

OPERATION	ND11410N	A REA	\ \{\bar{4}\}	RATIO .25	HATIO SO	RATIOS APPRATIO S	PATIO TO FL	LOWS RATIO 1009	RATIO 6	RATIO 7	RATIO 8	RATIO 9
HYDROGRAPH AT		35.10 90.91)		1343. 38,02)(1343. 38,02)(1611, 45,62)(1611, 45,62)(2685. 76.03)(2685. 76.03)	3759. 106,443(3759. 106,443(5370 152.06)(5370	8055. 228,091(8055. 228,091(11814. 334.54)(11814. 334.54)(17453; 494,20)(17453; 494,20)(659.073 659.073 659.073
ROUTED TO	50	35.10 90.91)		941. 26,65)(941. 26,65)(1139. 32.24)(1139. 32.24)(1940.	82,713 C 82,713 C 82,713 C	122.103. 423.103. 122.103.	189,7016 6699, 189,7016	288.58)(10191. 288.58)(15177. 429.7736 15177. 429.7736	583,42 583,42 583,42
HYDROGRAPH AT	S.	35.10 90.913	7 ~	1343. 38.02)(1343. 38.02)(1611; 45.62)(1611; 45.62)(2685. 76.03)(2685. 76.03)(106.84)(106.44)(152.06)(152.06)(152.06)(8055. 228,09)(8055, 228,09)(334,543	17453 494.20)(17453 694.20)(23628. 669.073 669.073
ROUTED TO	2030	35.10 90.91)		941. 26.65)(941. 26.65)	1139, 1139, 1139, 32,24)(54.940. 54.940. 54.940.	2921. 82,71)(2921. 82,71)(4312, 122,10)(4312, 122,10)(189.70)(6699. 189.70)(288,58)(20191) 288,58)(15177- 429-773(15177- 429-773(M
нуовобран нуовобран нуовобран	9	10.00		12.93. 12.93. 12.853.	543. 15,38)(543.	905. 25.63)(905. 25.63)	1267. 35.88)(1267. 35.88)(1810 51.25)C 1810 51.25)C	2715. 76.88)(2715.	3982. 112,763(3982. 112,763(5883 166.57)(5883 166.57)(7964 7964 7964 225,52
S COMBINED S		80.20	- N	2219. 62.84)(2219. 62.84)(2676. 75.79) 2676. 75.79)	4563, 4563, 129,21)(194,23)(6859, 194,23)(10154 287,53)(10154 287,53)(15693. 444.39) 15693. 444.39)	23748. 672.47)(23748. 672.47)(35345 1000.863 35345 1000.863	48011 1359.53 48011 1359.53
ROUTED TO	302	207.72)	_~~~	1200. 33.98) 33.98)	1200. 13.98)(33.98)(1200, 13,98)(33,98)(1200° 33°98)(33°98)(1200° 33,98)(1200° 33,98)(33,98) (33,98) (33.98) 1200.	33,98) 33,98)	1200 1200 1200 1200 1200
				1036. 1036. 1278.) 1036.	16ES IN AC 1486. 1488. 1486.	7587 3587 (4424.)(4424.)(7263.7 7263.7 7263.7	HETERS)*** (11788.)(9557. (11788.)(195876. 19583.)(15876.	24937 30760.3 24937.	38699 38699 47784 47784	53376 66455 53376 66455

EXHIBIT 3

SIZING RESERVOIR AND PUMPING PLANT (Unconstrained)

												LEGEND		n	= REVISED INPUT	(,)= KEVISED INPUT DATA																	
				065	3000	2720	2 4	. 'A					30000	7.500						.35	0879				` •	11.0			0	01	27.20	3 =	116
3	4.00 0.00 0.00			-	· N	3330	0 7	£.					0 -	0000		•				.	5620		•	<	•	19. O			5	At t	3330	9	3.
				375	1290	3980	2 K	2				200	1000	5550						•	4800		ro.			7.8			37	0 0	5980	- 10	23
	00 • •	-		190	1040	9 9	9 00	2				0	0.1				- 00 Y Y	0		•	4220			o 1	•	6.5			5	3 0	9000		on
	1.50			85	5	5100	99	30	u			000	1060	4350			80	10250		~ <	3200	•				4.7			82	910	775	99	30
	00° 1			50	80	5370 995	1.	30		۰.		•	2000	9	TYUN DEAL	-	~	6100		* 0	2580	C	, n.	•	• •		•			3 1	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-	30
	0.70		MOLSNI W	33	80	5360 1250	0	33		7-		975.0	u o	0	2		0#6	2050			1740	0		• •					33	9 5	1250	•	33
KAINED	0.50		35.1	92	760	3000 1540	120	35	ESERVUIR			E 000	-	9	CHANNEL		~	1020		•-	1380	0	((1.0		35.1	- 26	7.080 7.080	1540	120	35
UNCURSIRAL 1 1	0.30	10] Y :	~	7	⊃ उ	2	. 38 -	OPOSED R			S	00	20	ENTIAL		20	200	_ n	•	1130	7	00	•	9.9		5.6 20		~ : -	- 0	1840	9	99
(9) (9)	-10000 -10000	0	_	25	9 0	0022	č	0 •	ax.			9000	965	0	104		••	•	020 4	ິ້	1030	3	04	•	æ•\$) • • • • • • • • • • • • • • • • • • •	•	A1		2200		07
4 E	5-N=		~ X	2	z 2	zz	z	2 ¥ 	-	> >	•		~	M -	٠-	> •	·N	~ ∩ 1	~ -	. 1	۸,	V P	3 3	3	3	J :	*	x	z 3	: 2	z	z:	Z

•										
> <	900	15. E. 7. E. 7	940	2135	3080	6300				
2030			0502	6100	10220	24000				
•	5.0		→ (C) 	٠ ٢	-	٥		y		
. 25		•10		.05	500				٠,٠	
1030			1740	2280	3200	4220	4800	5620	6480	
1540		•	12100	15100	21000					
		9.1	'n	5.0	7.5	8	- -			
20.5	23.1		34.5	64.3	50.1					
		- (
	LUCAL IN	۳.	M TO FOREBAY POOL	.						
; a	•	• • • • • • • • • • • • • • • • • • •								
000	200			- 1-	20	6		170	561	
1320	- 5.20 5.30		n c) () (V (01)	550	9.0	079	000	
730	615	515) (F	2 6	ב מ מ מ	000))))	- C	000	
72	5.5			, ,	30	2 6	n a	7		
~	12		;) - u -	V C	2 -	00	<u>.</u>	3 (
**	30				•	•			• • • • • • • • • • • • • • • • • • •	
•	COMBINED	INFLOW TO FOREBAY	FOREBAY	POOL						LEGEND
_	305				^					
	PROPOSED	PUMPING	PLANT SITE	, i						N = NEW INPUT DATA
-			-	•						R = REVISED INPUT DA
0	007	100000				•				() = REVISED INDIT DA
0	1200	1200								
						•				
	407	00000								
۰ د	200	0000								
1000	> <	2 0	•							
	750		000	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0204					
· c	070	1000	004		0000	0000	10000			
305	10	•) - !	706		000	0 / 90			
.70	04.	2.45	15	-	A C	000	•	11 e c		
1500	2300	4000	7000	12500	20002	28000	37000	20000	20009 2	
•	37.5	75.	1125	3150	5850	7050	0000	10650	11350	
0	10.5	5.	S S S	105	202.5	002	200		> 0 0 0 0	
6							, ,	}	^	

			0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		16 277,367 ,102E+04	137 278.288 .102E+04	:ST ANDMG O FIN(NC)	
			₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽		TANCST 741,516	TANCST 739.917	TANCST 738,325	
			8 ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° °		083 DEV	083 DEV	08J DEV	
	JOB SPECIFICATION NHR NMIN 10AY IHR IMIN METRC IPLT IPRT NSTAN 1 0 0 0 0 0 0 3 0 3 00 0 0 3 0 6 0 0 0 0	:D 3.25 4.40	01V 7 0		VAR(M1)	VAR(M1)	VAR(M1)	
NO.	ETRC IPLT RACE	PERFORMED 110m 1 20 202		NPUT FAN 0.0000	. 100E+05	VARCM)	VAR(M)	.1018E+04
SONTROL SYSTEM COMPONENT OPTIMIZATION RESERVOIR AND PUMPING PLANT TRAINED	ECIFICATION THE IMIN M NWI LROPT T	MULTI-PLAN ANALYSES TO BE PERFORMED NPLANE 2 NRTICH 9 LRTIOH 1	VAR 4 SYSTEM OPTIMIZATION VAR 5 VAR 6 0.	FIXED COST INPUT FDCNT 0.0000 0.0000	E E	E H	NO W	.1018E+04
EM COMPONEN ND PUMPING	JOB SP IN 10AY 0 JUPER	I-PLAN ANAL NPLAN 2 N	VAR 0.	A 0 0 0				
NTROL SYST ESERVOIR A AINED		MULT.	VAR 3					.1019E+04
FLOOD COR SIZING RE UNCONSTRA	Ø 0 Z •	71.00 88	VAR 20.					RIABLE 1
		(4)	VAR 1					OBJECTIVE FUNCTION FOR VARIABLE
								IVE FUNCT
								OBJECT

VAR 1 ADJ FROM	100000000000000000000000000000000000000	9384.07	2-	Ξ σ Σ σ	VAR(M)	VAR(M1) .938E+04	083 DEV	TANCST 731,737	ANDMG 284.417	0 FIN(NC)
			Sw	Ξο	.396E+04	VAR(H1) .938E+04	08J DEV	TANCST 729.021	ANDMG 286,506	0 FIN(NC)
			OM Z	EO	. 392E+04	VAR(M1)	08J DEV	TANCST 726.305	ANDMO A A A B G	O FINING)
OBJECTIVE FUNCTION	FUNCTION FOR VARIABLE 9	.1016E+04	.1016E+04		.1015E+04					
VAR 9 ADJ FROM	4000,00 TO	2948.79	NG 1	Ξ°	.938E+04	VAR(M1)	08J DEV	TANCST 660,364	ANDMG 344,595	0 FIN(NC)
			UN Z	Σ	VAR(M)	VARCM1)	OBJ DEV	TANCST 658.880	ANDMG 346,020	0
OBJECTIVE FUNCTION FOR VARTABLE	FOR VARIABLE	100	UM	Σ	VARCH)	VAR(M1)	08J DEV	TANCST 657,398	347.476	0 FTN(NC)
VAR 1 ADJ FRUM	9384,07 10	9118,64	*1005E+04	E O	.1005E+04 VAR(M) .295E+04	VAR(M1) •912E+04	083 DEV 0.000	TANCST 656,170	ANDHG 348.714	0 FIN(NC)
			2~	Σ σ	VAR(M) . 292E+04	VAR(M1)	08J DEV 0.000	TANCST 654,168	ANDMG 350.656	0 FTN(NC)
OBJECTIVE FUNCTION FOR VARTABLE	FOR VARIABLE 9	.1005E+04	NC 3 3 1005E+04	E O	VAR(M) .289E+04 .1005E+04	VAR(M1)	083 DEV	TANCST 652,166	352,606	. FTN(NC)
			2	E TO	VAR(M)	VAR(M1)	083 057	TANCST 641,808	ANDMG 363,145	0 FTN(NC)
VAR 9 ADJ FRUM	2948,78 10	2885,32	2	E T	. 912E+04	VAR(M1) .289E+04	000°0	TANCST 651.861	352.917	0 FTN(NC)
			S.W	Σ	VAR(M)	VAR(M1)	08J DEV	TANCST 650.422	354.382	0 FINCAC)
			on 2	¥ o	VAR(M)	VAR(M1)	083 05.0	TANCST 648,514	355,885	0 FTN(NC)
OBJECTIVE FUNCTION FOR VARIABLE	"CIR VARIABLE 1	.100SE+04	.1005E+04		.1004E+04					

		NC T	M1 VAR(M) 1 .289E+04) VAR(M1) 4 .137E+05	08J DEV	TANCST 711.373	319,365	0 FIN(NC)
		¥ 0	M1 .289E+04) VAR(M1) 4 .105E+05	08J DEV	TANCST 673,724	337,923	0 FIN(NC)
		Z O	M1 VARCM) 1 .289E+04	VAR(M1)	08J DEV 0.000	TANCST 658,346	ANDMG (0 FIN(NC)
		× •	M1 .289E+04) VAR(M1)	081 DEV	TANCST 651,861	352,917	0 FINCAC)
		Σ O U Ni Z	MI VARCMO	VAR(M1)	08J DEV	TANCST 649,902	ANDMG (0 FIN(NC)
		E O N	MI .283E+04	VAR(M1)	084 DEV 0.000	TANCST 647,943	ANDMG 0	0 FIN(NC)
OBJECTIVE FUNCTION FOR VARIABLE 9	.1005E+04	.1005E+04	.1005E+0	70				
		X → (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	M1 VAR(M) 9 .912E+04	VAR(M1)	084 DEV	TANCST 749.811	ANDMG C 272.677	0 FIN(NC)
		Σ H	M1 VAR(M) 9 .912E+04	VAR(M1)	083 DEV 0.000	1ANCST 681,246	325,665) FINCED ,101E+04
		¥	M1 VAR(M) 9 .912E+04	VAR(M1)	08J DEV 0,000	1ANCST 660.677	344.347	. 101E+04
		E → 2	M1 VAR(M) 9 .912E+04	VAR(M1) . 289E+04	08J DEV 0.000	TANCST 651,861	ANDMG 0	- L
		E → UN Z	M1 VAR(M) 9 .903E+04	VAR(M1)	083 DEV	TANCST 650.422	ANDMG 0	. FIN(NC)
		Σ → UM	M1 VAR(M) 9 .894E+04	VAR(M1)	08J DEV	TANCST 648,514	-	FIN(NC) 100E+04
OBJECTIVE FUNCTION FOR VARIABLE 1	.1005E+04	.1005E+04	.1004E+0					
		N O	M1 VAR(M)	VAR(M1)	08J DEV	TANCST 711,373	ANDMG 0	0 FIN(NC)
		Ж О О П	M1 .289E+04	VAR(M1)	08J DEV 0.000	TANCST 675.724	ANDMG 0	FIN(NC) .101E+04
		Σ Φ U V	M1 .289E+04	VAR(M1)	08J DEV 0.000	TANCST 658,346	346,654	* TN(NC)
		¥ 6	M1 VAR(M)	. 912E+04	08J DEV 0.000	TANCST 651,861	352,917	FTN(NC)
		E O	M1 .286E+04	VAR(M1)	087 DEV	TANCST 649.902	354.917	FTW(NC)
0.00		E O M	M1 VAR(M)	VAR(M1) .912E+04	08J DEV 0.000	TANCST 647,943	ANDMG 0 356.916	FTN(NC)
TEST LIVE FUNCTION FOR VARIABLE 9	.1005E+04	.1005E+04	.1005E+0	7				

	À									•	*****	
		•				•	•			•		
			, vi	13.	15.	17.	19.	* 7 N	• 0M	07.	10 • 3 •	
			977	118.	151.	194	00 100 100	313.	385	460	550.	
			. O 87 4	323	260	228	1,464	1300	190.		165.	
		a	4.30	700		U 1	PLAN 1 RATIO		•	• • •	• •	
				TAPE	EAD FROM	HYDROGRAPHS R		PREVIOUSLY GENE	PREVI			
		TAUTO	ISTAGE I	INAN E	F 8 6 0	J 4	OW IECON ITAPE 0	RESERVOIR INFLOW TAG ICOMP IE	.ae	POTENTIA		
					×o	COMPUTATION	RUNOFF	SUB-AREA				
		****	**	**	***		****		****		*********	
. 101E+04	ANDMG 346.654	TANCST 658,346	08J DEV	VAR(M1) •953E+04	VAR(M) 289E+04	E O	2.7					
0 FTN(NC)	337,923	TANCST 673,724	08J DEV	VAR(M1)	VAR(M) 289E+04	Σ Σ Σ	о -					
0 FTN(NC)	ANDMG 319.365	TANCST 711,373	08J DEV	VAR(M1)	VAR(M)	E O	2 -					
					.1004E+04	•	.1005E+0	.1005E+04	•	VAPIABLE	FUNCTION FOR VARIABLE	JECTIVE
0 FTN(NC)	ANDMG 355,885	TANCST 648.514	08J DEV	VAR(M1)	. 894E+04	Ξ Σ	OM Z					
0 FTN(NC)	ANDHG 354,382	TANCST 650.422	083 DEV 0.000	VAR(M1)	VAR(M)	Σ Σ	200					
100E+04	352,917	TANCST 651,861	08J DEV 0,000	VAR(M1)	VAR(M)	Ξ Σ	Š.					
0 FTN(NC)	344.347	TANCST 660,677	08J DEV 0,000	VAR(M1)	VAR(M)	ο Σ Σ	0 2					
0 FINCAC)	325,665	TANCST 681,246	08J DEV 0.000	VAR(M1)	VAR(M)	HO E	2 4					
. 102E+04	ANDMG 272.677	TANCST 749.811	08J DEV	VAR(M1)	VAR(M)	 ₩ ₩	2					

				HYDR	HYDROGRAPH ROU	ROUTING				. 1	
	PROPOSED	JSED RESER ISTAG 110	WOIR ICOM		N ITAPE 0 0	JPLT 0	CPRI CPRI	INAME	1STAGE 0	IAUTO 0	
	0°0	000°0 0	0 A V 0		ROUTING DATA	7A 10PT	Q.O.E.	IDVR	S. R. O		
	0 • 0 8 0 10	000°0 0°00°0	A V G		PLAN 2 ROUTING DATA IRES ISAME 1 0	0	dwd Md 1	IDVR			
		NSTPS 1	NSTD	, L & 6	G AMSKK	× 0 0 0	13X 0000	STORA -1.			
CAPMX CAPMN	MN COGL	ELEVL 975.00	EXPL Sol	TOO.OO.	WOIR D RANCST	ATA RDSCNT .0504	00° 0°°	ELEVT 975.00	EXPT 0.00		
CAPACITYS ELEVATIONS COSTS	• • • • • • • • • • • • • • • • • • •	2500. 1500.	4000. 1015. 2400.	5200. 1030.	6800 1045	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		11500. 1075. 4950.	15500. 1090. 5550.	21000. 1105. 6000.	30000
LET CREST ELEVATION	UN IS 1060,71	p- ≪	STURAGE OF		9119,						
STORAGE		1097. 463.	2245. 926.	8YNTHETIC 4657. 1389.	TIC STORAGE 9119.	13098, 11189.	FUNCTION 16565, 20432,		20229 29653	38969 38960	30000 48060
			97.	TATION	110, PLAN	2, RTIO					
2 K K K K K K K K K K K K K K K K K K K	200 200 200 200 200 200 200 200 200 200	71. 426. 582. 445.		83. 83. 479. 5575. 157.	0017FL0W 94. 507. 3655.	1006 8334 1335 1305 1305	10. 119. 556. 305.	135. 573. 573. 1077.			2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7119 7719 935 1413 886	719. 763. 998. 1406. 1117.	773. 1067. 13657. 1882.			STOR 720. 792. 1207. 1350. 1019. 832.	8 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	723. 813. 1327. 1291. 966.	7.87 8.82 9.85 8.03 8.03	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		1861-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0
	I NO CHE SE		0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	6. HOUSE NO. 19. 19. 19. 19. 19. 19. 19. 19. 19. 19	24*HOUR 513* 15* 13*80 13*80 1017*	72=H0UG 800 1330 1330 1330 1330 1330 1330 1330	TOTAL	. VOLUME 16586. 470. 18.73 1371. 1692.			
			R XA	MAXIMUM STORAGE	ORAGE =	1413,					

# # # # # # # # # # # # # # # # # # #	1974			E	777 1052 2287 2018 1461 1461	
	0 t 0 0 t 0			W O B O A O W W O B A O B A B A O B A B A O B A B A O B A B A	2007 2008 2008 1008 1008 1008 1008 1008 1008	
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1524 1524 10487 10487 10487	VOLUME 19711. 558. 287 22.11 1630. 2010.		823. 837. 837. 875. 875.	741. 239. 2163. 1562.	3166.
128 6118 6113 4400	724. 033. 1469. 1764. 1070.	TOTAL		2000 NW 0000 CO	731. 912. 2057. 2173.	R T07AL
127. 585. 624.	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	72-HUUR 329. 99. 22.81 1630. 2010.	1589. v 2, RTIO	00.000 000.000 000.000 000.000	727 8907 1985 2219 1666	72-H0U 510U 153 34.03 3106
0017700 13. 13. 13.	821.108 116. 116. 116.	24+HDUR 582- 16- 15-62 115-62 1156- 1156-	RAGE	0017FL08 189. 735. 716. 519.	840R 870. 870. 772. 723.	24.43.42 835.43 22.443.25.43
7. 99° 515° 501° 44°		0 ************************************	MAXIMUM STOP	165. 165. 934. 738.	724. 851. 1608. 2290. 2 1780.	AK 6*HOUR 7. 26. 7. 25. 26.30 4.25 6.30 464.
2 4 8 8 9 4 4 8 8 9 4 4 8 9 8 9 8 9 9 9 9		α ν ν Σ Η Σ		122. 142. 503. 762. 554.	724. 831. 1445. 2309. 1838.	0005⊢± 0005⊢± m40
7. 71. 413. 659.	7 7 7 20 - 7 7 20 - 7 7 20 - 7 7 30 - 7 7 30 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	INCOCH INCOCH INCOCH INCOCH		1.18. 0.00. 0.00. 0.70.	724. 8124. 7293. 7317. 1368.	INCHE POORT
57. 321. 561. 549.	7720 7720 7760 710 710			12. 4. 94. 4. 88. 9. 3. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9.	724. 1158. 2311. 1954.	

00000000000000000000000000000000000000	11.79 11.09 11.09 12.09 14.09 14.09 15.09 16.00 16.00			12 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 4 4 4 8 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
70, 1062, 1062, 1040, 6889,	7772 10872 2085 20885 7154 1546			1000 12077 11294 965	797. 1256. 4077. 4161. 3272. 2439.	
3800 10380 105380 10610 10810	775 775 775 775 775 775 775 775 775 775			6.5011. 0.1408. 0.1408.	11667 18274 18234 18511	5000 1000 1000 1000 1000 1000 1000 1000
388 1007 1007 6936	738. 2970. 3065. 2005. 1653. 1653.		S.	468. 1180. 1157.	7488. 30008. 40008. 40008. 3401.	Z N O
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	7322 24670 24670 24055 1709 1709 172=HOUF	, , , , , ,	LAN Z, RTIO	AMME AMMUNO WONWER OVO.	739 3300 4350 4551 8574	78 + HOUE 10
001FLOW 18. 184. 925. 1089. 733.	24 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	STURAGE #	110, PL	001FLGW 26. 377. 1356. 1337. 1024.	2363 7363 2978 4388 3634 2758	24 + HOUS 1253 25 1 255 26 2 355 3068 3068
17. 232. 832. 1093. 979.	729. 2005. 2018. 3118. 28524. 1826. 1876. 1970. 1970. 1970.	MAXIMUM ST	STATION	3331. 998. 1340. 1210.	735, 988, 8620, 4406, 3726,	4K 6*HOU 0. 1334 8. 38 8.38 6.62 8.66
17. 198. 733. 1095. 994.	728. 878. 1767. 3124. 2600. 1888. 1888. CMS CMS ACHES 3 3			00 0000 00 0000 00 0000 00 0000 00 0000	734 9449. 8469. 8918.	
17. 645. 1094. 1008.	728. 851. 1544. 3121. 2674. 1951. INCH			0000 0000 13300 10245 10745	734. 1940. 1372. 3909.	INCE THOUS CL
10000000000000000000000000000000000000	728. 824. 824. 8304. 8017.			10000000000000000000000000000000000000	734 670 1662 1662 1799 1799 1799	

7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1 8 1 8 8 9 1 8 8 9 1 8 8 9 9 1 8 8 9 8 9		2000 2000 2000 2000 2000 2000 2000 200	974 9216 9216 9113 6524	
15000000000000000000000000000000000000	4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		219 845 845 1732 1732	8968 8627 9217 7965	
595. 1496. 1885. 1476.	0.00 20 20 20 20 20 20 20 20 20 20 20 20 2		140. 754. 1768. 2333. 1746.	830. 1818. 9311. 9097.	VOLUME 83898. 2376. 3.71 94.13 6937. 8557.
5.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	10002 100024 10001100 10001110	. 0.1	89. 1702. 1702. 2580. 1622.	1666. 7674. 9429. 8332.	HOUR TOTAL 398. 40. 40. 40.13 40.13 627. 557.
45, 526, 1403, 1597, 1500,	D44	6687. PLAN 2, RTIO	665. 1625. 2808. 1774.	18 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	#HOUR 72*H 2154* 13 61* 2 28 5 29 94 4574* 699 5272* 855
001FL 399. 1313. 1593.	7477 7477 7477 7470 7470 7470 7470 7470	STORAGE .	58. 58. 1539. 2993. 1787.	762 1436. 6109. 9501. 7166.	HDUR 24:H 63. 63. 78 78 78 78 78 802.
1899.	117255 366905 666805 59958 48138 6-10	MAXIMUM STATION	559. 1451. 3105. 1601.	1535. 5257. 9653. 7297.	A
100 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	T T T T T T T T T T T T T T T T T T T		5523. 1344. 3113. 1815.	758. 1237. 4423. 9656. 7429.	OOOONT TO
10000 1000 1000 1000 1000 1000 1000 10			2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	758. 3648. 9601. 8888.	CFS CCFS INCHES MM MM ACEPT THOUS CU M
15564	7444 948. 2182. 64441. 5152.		200 200 200 200 200 200 200 200 200 200	7 000000000000000000000000000000000000	

	463. 1137. 8608. 3509. 1770.	110988 11998 9888 7016					1338 14089 18089 18006	######################################	
	324, 1027, 8345, 4038, 1784,	982. 11886. 10050. 7145.					11834 11834 11837 11810 11811 1677	10077 12004. 100004. 7438.	
	206. 960. 7586. 4613. 1560.	888 11562 10262 10262 7274 7274	113 - 111 -				1330 1330 1330 1330 1693 1693 1693 1693 1693 1693 1693 1693	3114 14091. 11164. 7568.	VOLUME 227836* 6452* 10,06 255* 23238*
	131. 903. 6220. 5229. 1812.	82% 2168, 10980, 10558, 8739, 7404,			•		120288. 170288. 17573. 1741.	861. 13623. 11557. 7698.	97. 97. 98. 98. 962. 38.
	DE 826.	795 1997 10107 10831 7832 7535		11996.	LAN Z, RTIO	ST TOT ANN B. 32	105623 105623 105623 105623 105623 105623 105623	8884 17854 11772 11578 7889	2.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
	007FLG 85. 758. 1834. 6513. 1701.	1828. 1828. 1928. 11105. 7667.	**************************************	STORAGE #	110, PL	R CAP CO	0UTFLO 115. 930. 7836. 9546. 2279.	810. 2267. 11669. 12398. 9301.	24 74 44 44 44 44 44 44 44 44 44 44 44 44
	80, 693, 1700, 7129, 1892, 1715,	1667 1667 1667 11367 7800	2444. 2444. 2444. 25. 231. 2404.24.	MAXIMUM 8	STATION	RESERVOI 9118.	108. 844. 1450. 10536. 1745.	804. 2042. 10226. 12819. 9475.	A A A A A A A A A A A A A A A A A A A
	78. 630. 1568. 7686. 2223.	779. 1512. 6387. 11605. 9277.	₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	8000 8000 80000 90000 80000 80000	0 0 0 0 E F E E E E E E E E E E E E E E
	78. 571. 1446. 8157. 2003.	779. 1365. 5212. 11806. 9439. 8067.	THOUS ACT				106. 672. 1628. 12537. 3710.	802. 1616. 6967. 13603. 9911.	INC THOUS ACT
All the second s	78. 515. 1297. 8499. 3031. 1756.	779. 1226. 4177. 11951. 9621. 8201.					106. 1480. 13441. 1780.	802. 1420. 5541. 13942. 8490.	

			HYDRUG	HYDROGRAPH ROUTING	 92 2				
POTENT	AL CHAN ISTAG 1030	POTENTIAL CHANNEL MODIFICATION REACH ISTAG ICOMP IECON ITAPE 1030 1	FICATION IECON	REACH ITAPE 0	1 d	JPRT O	I NA A	ISTAGE 0	IAUTO
			ALL PLA	ALL PLANS HAVE SAME ROUTING DATA	¥				
0°0 0°0	0.000	0.00 0.00	IRES 1	ISAME	1001	9 P M D	10 50 10	LSTR	
	SST PS	NSTOL 0	LAG	AMSKK 0.000	× 0 • 0	0.000 0.000	STORA -1.		
0. 200.		475.	2050.	6100.	3080.	~	6300. 4000.	00	00
		STATION		1030, PLAN 1, RTIG	1, RTIG				
6		PEAK 941.	6-HOUR 907.	24-HOUR	72-HOUR	TOTAL	TOTAL VOLUME		
INCHES	o o	27.	90		8		492		
) <u>E</u>) S I		6.10	16,51	19.49		10,4		
THOUS CU M			550 550 550	1501.	1772		1436.		
		X X Y	MAXIMUM STORAGE	A66	7.7.7				
		STATION		030, PLAN	1030, PLAN 1, RTIO 2				
CFS		PEAK 1139.	6-HOUR 1091.	24-HOUR 733.	72*HOUR	TOTAL	L VOLUME		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		32.	31.	. K	10.		590		
Σ	Σ		7.34	19,73	23,38		23,58	. 60	
THUE ACTE	- 5			1454	1723		1723.		

MAXIMUM STORAGE =

PLAN 1, RTIG 3 Head

TOTAL VOLUME 152725.	71.3	1.0			TOTAL VOLUME	6386	6	0 ~	3001		200	8642	4	25236. 31128.			TOTAL VOLUME	3	20		
72-HOUR 2545.	71.3	15577.	3067	1, RTIG 8	72-HOUR	100	6.6	0 0	300	4234. 1, RTIO 9	72-HUUR 5087.	777	42.4	31128.	55055	2, RT10 1	72-HOUR 269.	40		1335,	
24-HOUR 5550.	ა ა ბ	13585.	STORAGE =	1030, PLAN	200	234	8.7	222,93	0266	STURAGE = 1030, PLAN	24-	319	6 4 6 0 6 0 4 6 0	27580.	# ***	1030, PLAN	24-HOUR 472.	• 6	12,70	1154,	
6*HDUR 9555.	เกล	4741. 5848.	MAXIMUM STOR	STATION	6-HOUR	707	3.7	2.0	728	MAXIMUM STOP	1936#	548	, M	9507. 11850.	MAXIMUM STORAG	STATION	6-HUUR 526.	• 5 • 5 • 5 • 5 • 5 • 5 • 5 • 5 • 5 • 5	3.0°E	322.	
PEAK 10191.			\$	10	PEAK	100				Y F	PEAK	583			¥	91	or Non X	S			
Ω α α α	INCHES MA	AC-FT THOUS CU M			e Li	S E	INCHES	E L L L	, 3		2. 8.4.0	ο ο Σ u Σ u) E	THOUS CU M			64.5	oo oo saacaa	×	AC-FT THOUS CU M	

PEAK 6-HOUR 72-HOUR TOTAL VOLUME 593, 590, 559, 315, 18904, 17, 17, 15, 9, 55, 117, 18, 18, 184 3,97, 14,51, 21,21, 1563, 293, 1069, 1968, 1968,	MAXIMUM STORAGE # 254, STATION 1030, PLAN 2, RTID 3 PEAK 6*HOUR 24*HOUR 72*HUUR TOTAL VOLUME 853, 24, 24, 13, 22, 13, 22, 13, 23, 42, 21, 02, 31, 87, 23, 49	MAXIMUM STORAGE B 388, STATION 1030, PLAN 2, RTID 4 PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME 1018, 1015, 27, 17, 17, 1011, 29, 1,58 6,83 26,00 40,05 504, 2564, 3641, 3641,	MAXIMUM STORAGE = 474, STATION 1030, PLAN 2, RTIO 5 PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME 1260, 356, 1196, 743, 44564, 356, 1274, 197 1697 8-45 32,22 50,00 6-23, 2374, 5685, 3685, 768, 2929, 4545, 4545,
CFS CMS INCHES INCHES ACHES THOUS CU M	CFS CMS INCHES INCHES AC#TT	CFS CMS INCHES INCHES ACEPT THOUS CU.M	C T S S S S S S S S S S S S S S S S S S

MAXIMUM STORAGE #

1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4					manus or a manuscriptor of the control of the contr																																				
0.000																				,	~ 6	2 4	. 80	33		67	5.6	40	. 41			₩	00	00	00	0	2.5	20.4	2	30	
- • 50 K	بر ع 2		000			5.6 0.6	003	00/	0	000	300	000	. 700	000			30.200				- K	•	*1	ব	ทั้	rn			2,			TYP	Ö	Č	Š	ŏ					
																		S DATA			ב בינ	2 *		•	190 100 101 101			. 24	20.0			£ 3d	00.0	0000	00.0	00.0	0 H	0,0	0		
₩.			000	2 5	2 5	2 (2	0 6	0	0	0	9	0 9	2 6	2 5		18.100	OR THI			>											<u>></u> سو									
•	Z 4 .	:	000		2 5	2 6	00	0	00	00	00	0.0	000	9	000		000	AMAGES F	PLAN 1		I ADA	2000	0 7	. 51	52.0	7-	.05	. 0 z	1,59	V V V		TYPE	00.0	00.0	00.0	00.0	70		20		
10	A 1 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	ا ده د د	Č ć	5 ÷			×.	•	ਤ •	•	Š.	. 7			- n		ac	0				o or	· -	.c	~ ~	1 0			æ			Σ.	0	0	0	. 0 1	: 	3 20	ac		
	1030	Ε :	<u> </u>		- 0	2	0	00	c	000	00	0	0	D. (ANNUAL	1050		ე წ	9 0	oc ர	6.6	7.73	0 10		9	33.5	205		SUN	0	0	0	0		o a			
1030		7	٠ •	3			r i		ă •	æ.) ()	201	0 1 0 1	20	0 4 5 4 5 4 5 4 5 4 5 4 5 6 5 6 6 6 6 6 6	7 7 7	50,100	R 4 GE	TION	nr.		. ^		n.	101 -	c		7		AT TON	e e		2	n.	ç	(۲۰	r.	- 4		.014	
	S TA	¥	•	•		•				•		•		•	 			AVE	1 S 41	Ond.	Z 0	9 6	776	1.07	765	9 -	- C	.0.	DMG	9	0.00	2	80.	1.75	1.77	1.0.1	000			0	
	TA FO	4 ()	0.50	0 K 2 *		- 0	0 2 2 2	2.000	0 ~ ~ n	0087	5670	64680	7340	0 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	00001	00151	21000	NT OF		0 : 1 : X : I	000	0000	160	1.709	7 CO P	1 00 00 00 00 00 00 00 00 00 00 00 00 00	0.20	900	AVG ANN	1 to	FXED	FREG	000.	5,462	3.097	1.769	100	4 10 0 0 0 10	020	900	
	IC DAT	3	6.6	2 6		2	0	00	00	6	00	00	c .	C 4	0 0	9 6	0.5	ADJUSTMENT	DAM4		-	_			4312				¥	2										12276	
	CONDMIC	2	ر د د د	0 4	ייי	ñ i					ř	•	Ň.	•	•		ė	NO AD	0007						n 4	-	-	· ru		200	300		•					- n			

0.000

CFS 1139. 1091 CMS 32. 1091 CMS 32. 1091 CMS 32. 7.3 CMS 541 CMS 140. 1859 CMS 1940. 11679 CMS 1920. 11679
--

N S S E E E E E E E E E E E E E E E E E	• • • • • • • • • • • • • • • • • • • •	# • • • • • • • • • • • • • • • • • • •	106. 106.		04150 2040 2040 2040
AC-FT THOUS CU M		3120 3849.	7435	800	8612 0623
		MAXIMUM STORAGE	RAGE .	2271.	
	10	STATION	2030, PLAN	1, RTIO 7	
	PEA	6-H0UR	2	72*HOUR	TOTAL VOLUM
S E	10191.	9555	5550	2545	152725
D G I I I I	£67.	* 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	157.		
E			0 0	160	•
AC-FT		4741.		- N	3 10
THOUS CO M		8 78	358	15577.	15577
	Š 5	XIMUM 810	810RAGE = 2030. PLAN	2007	
	bij.		, ji.,		
CFS	15177.	6-HOUR 14262.	24.HOUR 8279.	72-HUUR 3759.	TOTAL VOLUM
3	43	404	23.4	106.	6386
INCIES		3,78	8.7	96.6	-
E		0.0	22.9	253,02	53.0
THOUS CU M		7076. 8728.	16430.	23001.	18647.
			8 39 XO-0	.*	
	ST	STATION	2030, PLAN	1, RT10 9	
	PEAX	6-HOUR	24-HOUR	72-HUUR	TOTAL VOLUME
CFS	20603	19364	11267.	5087	661509
	583.	548.	319.	144.	8642.
INCHES		5,13	11,94	13.4	13,4
		150,35	303,38	342,41	342.4
4		9607	22359	5236	25236
1H008 C0 W		11850	27580.	1128	31128

0	27. 2	06.10 6.104 6.10 8550. 555. 84XIMUM STOR	STORAGE # 1501.	1110 mm 1110 m		17369. 492. 19.47 1436.
O O O O O O O O O O O O O O O O O O O	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	64ATION 2 6-HOUR 1091- 31- 7-29 7-34 541- 668-	2630, PLAN 24-HOUR 733. 21. 21. 21. 19.73 1454.	2, RTID Z 72*HDUR 347* 110* 23*38 1723*	2 0	200 200 200 200 212 212 212 212 212 212
	0.0 0.0 0.00 0.00 0.00 0.00 0.00 0.00	ATTON 6 1900 1900 1300 1300 1300 1300 1300 1300	810RAGE = 2030 PLAN 2030 PLAN 24 PLAN 24 PLAN 25 PLAN	529. 2. RIIO 3 72°HUUR 579° 1.553 1.		VOLUME 347338 19848 18538 28728 35438
		XIMUM STO ATION	FORAGE = 2030, PLAN R PASHIR	890. 2, RTID 4		
N N N N N N N N N N N N N N N N N N N	00 100 100 100 100	243 18 - 48 18 - 4	140 140 140 140 140 140 140 140 140 140	1		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4

TOTAL VOLUME 69450- 1967- 3.07 7.92 5743-	TOTAL VOLUME 104155- 2949- 116-86 116-86 106-23-	TOTAL VOLUME 1527256 43256 176.35 126.286	TGTAL VOLUME 225518. 6 9 96 253.02 18647. 23001.
72*HDUR 1158, 33, 30, 77,92 5743, 7083,	1607. 2, RTIO 6 72=HUUR 1736. 49. 460 116.86 116.86	2271. 2, RTIO 7 72*HOUR 7 2545. 72. 6,75 171.35 12628.	3067. 2, RTIO 8 72-HUUR 7 3759. 106. 253.02 18647. 23001.
24-1100 2471- 70- 2.62 66.54 6049-	RAGE = 2030, PLAN 244-HOUR 3747, 100, 88 7435, 9171.	RAGE = 2030, PLAN 24+HDUR 5550, 157, 149,44 11014.	RAGE == 2030, PLAN 24+HOUR 2349. 225.93 16430. 20566.
4092. 4092. 116. 116. 27.55 2030. 2504.	MAXIMUM STORAGE STATIUN 2030 6-HOUR 24 6289. 178. 178. 1.67 42.34 3120. 3849.	MAXIMUM STORAGE STATION 2030 6-HOUR 24 9555, 271, 271, 271, 271, 271, 271, 271, 271	XIMUM STG ATION 6*HOUR 14262* 14262* 3*78 96*00 706* 8728*
4 7 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	10101 10101 20101 A A A A A A A A A A A A A A A A A A A	M 87 15.177. 430.
INCERSON INC	CFS INCHES INCHES ACEPT THOUS CU M	CFS DASS INCHESS AC-FT THOUS CU M	CFS CMS INCHES ACHTI THOUS CU M

STATION 2030, PLAN 2, RTID 9

CFS 20603, 19564, 11267, 5087, 505199, 2642, 1144, 6642, 13,48

INCHES 5.13 11.94 113,48 1

NPLOD NDMG ISAME TRGT DGPRT IAGST 16 1 1 0 0 0.000 0 0 0.000 0 0 TVSF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																														
FLOD EXPECTED ANNUAL 16 13 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																														
FL00 16 18 10 10																														
FL00 16 17 PLAN											S DATA																			
FL00 16 17 PLAN											FOR THIS DATA			0.0	86.	4.6	5 2	0	0.0	60	~	•	0 0	2 =	9 2) 3	o í	9.4 9	60	•
A C	0.000 0.000 0.000	1.500	5.000	9.800	800	3,900 3,000 8,000	0.800	3,100	8 000 4 500	4 300	DAMAGES	PLAN		1 Y P.E. 1 0 • 00	•	0.00 0.00		Ρĵ	1.50	33,58	PLAN	YPE	0.0	5.81	5.	- 0	3.	1.50	33.5	00.0
7A 30 20 8												2030		0000	00 o	99.0	7.73	3.70	000	33,58	2030	SUM	00.0					1.00	33,58	00•
ISTA 2030 2030 31ATIUN SUM	000°0	- 0	1 W I	0 0	11.80	15,000	20.30	63,10	34.500	50 100	AVERAGE ANNUAL	STATION	œ	- 3	√ 1	o ne	小 ↔	•	~ = 3		ATION	.	ΛE	Je	ດປະທາ	١	D P			
	1030 1130.	1380	2580	4220	4800	5640	7340	\$5.00 0000	2100	5100				4.000					000 014	AVG ANN DMG	S FOR STATION	850 VED 18	000 . 28	74.1 7.00	769 1.07 867 . 78	323 .39	095 .136	00.00	AVG ANN DMG	ANN BET
	6,000 5,000 5,500										T WE	FLOUD DAMAGES FOR		1 941.6.	11.59	200	6699	10101	20603	AVG	UD DAMAGE	FLOW	941. 6.	1940. 3.	4312.	6699	10191	9 20663006 .0	9 A C	AVG

	3,7	รู้ เกล	- 10								
IAUTO 0	43.	278. 30.	ล้ สัญ		IAUTO						
ISTAGE					ISTAGE 0						
INAME 1	# 00 # 00	333	เกิงไ		M N A M E		VOLUME 40553 1147 10007 13351 41331		48626 13770 13770 13770 40020 400210		VOLUME 81034 2295* 1.57
JPRT 0	RON TA	M 0	ด์พ่	**	 A F. 0	RTIO 1		RT10 2		RTIO 3	10
JPLT 0	PHS READ F 17.	233. 64.	• • • •		1.7ec	PLAN 1	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	PLAN 1	72-HUUR 810- 23. 23.88 4021- 4960-	PLAN 1	72=HUUR 1351. 58. 1.57 39.79
ITAPE 2	HYDROGRA 1, RATIO 4,		•	**************************************	IL TTAPE	AT 30	24-HDUR 1433 1433 411- 16-89 2848- 3508-	A7 30	24-HGUR 1713. 49. 20.19 3400. 4194.	e F	24*HDUR 2851. 1.32. 33.60
Y Pool 1ECON	ENERATED PLAN			COMBINE		APHS	6.HUUR 11306.35 13060.	တ	6-HOUR 2571. 7.30 7.57 1275.	RAPHS A	4375. 4375. 124. 12.89
FOREBA ICOMP 0	O MO	2.00 2.00 2.00	ฉัด		TO FOR	3. HYDROGR	V V V V V V V V V V V V V V V V V V V	HYDRUGRAPH	*	HYDROGRAPH	тои ≺ но- Х • •
INFLOW TO ISTAG 30	PREVIOUSLY 2. 64.	123.	• • • • • •	**	INFLOW ISTAG	SUM OF 3		SUN OF 3		P. S.	3 0 ℃÷
LOCAL INF		385. 154.	• •		COMBINED I	6	SOUNTHE LEMEN CONTROL	•	INC. CP. CP. CP. CP. CP. CP. CP. CP. CP. C		O O O O O O O O O O O O O O O O O O O
	v.v.	530. 183.	• •	* * * * * * * * * * * * * * * * * * *							

K 6-HOUR 24-HOUR 72-HOUR 6463. 4009. 1891. 183. 114. 54. 19.04. 47.25. 3207. 7957. 9380. 3955. 9815. 11570.	AK 6-HUUR 24-HUUR 72-HUUR TUTAL 10 9579	K 6-HUUR 24-HOUR 72-HOUR TOTAL 4050. 14690. 248. 4050. 15. 40.00 43.2 17.0 43.2 17.28 17.55. 20094. 8989. 21420. 24786.	AK 6-HOUR 24-HOUR 72-HOUR TOTAL 8. 22393. 12956. 5939. 2.63 6.01 6.89 6.01 6.89 65.97 152.68 174.98 11110. 25712. 29466. 13704. 31715. 36345.	K 6=HUUR 24=HUUR 72=HUUR 33502: 19329: 8771: 949: 547: 248: 3.89 8.97 10:17 98.70 227,78 258:39
CFS CFS CFS CFS ACFIT AC ACFIT ACFIT ACFIT ACFIT ACFIT ACFIT ACFIT ACFIT ACFIT	CTS 101514 HE S S S S S S S S S S S S S S S S S S	CONSTRUCTION OF CONSTRUCTION O	COTO 2340 COTO 2340 COTO 2440 COTO 2440	77 73 73 100 100 100 11

¥0®	0F 3	HYDROGRAPHS	AT 30	PLAN 1	RT10 9	
CFS CAS INCHES AC-FT THOUS AC-FT	PEAK 48011. 1360.	455100R 12851. 1289. 1349. 1348.0 27858.1	24*HDUR 26*HDUR 1245* 310**20 5210** 54110**	72*HDUR 1870* 1350* 1535* 745*77 36860* 72640*	דם זאר.	VOLUME 712202: 20167: 13,77 349,71 58890: 72640:
SUM	0F 3	HYDROGRAPHS	AT 30	PLAN 2	RTIO 1	
NO NO CHE	1664. 1664. 47.	6 + HOUUR 6 + 16 + 16 + 16 + 16 + 16 + 16 + 16 +	24-HDUR 1226- 1326- 14-55- 364-45 362-	72*HCUR 655* 19** 19** 19** 19** 19** 1009*	101 14 1	4010MR 1110MR 1100 1100 1100 1100 1100 11
WINS	9 8	HYDROGRAPHS	AT 30	PLAN 2	R710 2	
THOUS ACTIONS TH	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	24-H 1 450 1 1 450 1 450 2 450 3 8 641 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	72*HDUR 7780 720 22 620 380 620 560 620	1001AL	# # # # # # # # # # # # # # # # # # #
2	UM OF 3 HYD	HYDRUGRAPHS	A7 30	PLAN 2	RTIO 3	
THUCK A COLUMN A COLU	0 W 0 C 0 C 4 C C 7 C C	6 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	24-HDUR 24-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C	72.H0UR 1240. 125. 1.44 36.68 76.20	TOTAL	740LUME 2115* 2115* 35** 617*
E 000	M OF 3 HYD	RUGRAPHS	0 F	PLAN 2	RTIO 4	
INCHES CANS INCHES AND A COLUMN A COLUM	PEAK 4510. 131.	0.4H0UR 4394. 12.94. 12.94 2180.	24-HOUR 3049. 36. 1.41 35.93 6051. 7464.	72*HUUR 1675* 47* 1.94 49.35 8311*	TOTAL	VOLUME 100514. 2840. 1.94 49.35 8311.
The state of the s				A Company of the Comp	Anna Colombia de Calendario de	Contraction of the Contraction o

	PEA	3	8	3	VOT UM
- Σ	0 0 0 0 0 0 0	6299 118 178 178 178 178 178 178 178 178	4 2218 1119 1119 120 130 130 130 130 130 130 130 130 130 13	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	137152. 3884. 67.65. 11341. 13989.
S WIN	OF 3 HYD	DRUGRAPHS		PLAN 2	R710 6
00 00 E F E E E E E E E E E E E E E E E	200 200 200 200 200 200 200 200 200 200	6. HUUR 9428. 867. 877. 877.8 87778	24-HOUR 61003. 173. 7 2.83 12106. 14932.	72.4HUUR 3 2410 9 3 92. 161076 19868	TOTAL VOLUME 194798 5516* 3.77 95.65 16107*
¥ Э	GF 3 HY5	HYDRUGRAPHS	, F	PLAN 2	R110 7
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	6+HDUR 14017* 14017* 11.654 411.55 69548	24*HDUR 8974* 254* 105*75 17809* 21967*	72#HDUR 46H10 16H10 136*38 136*38 28655 286015	TGTAL VGLUME 278464- 7885- 5-38 136-73 23025- 28401-
U W∩®	OF 3 HYD	DROGRAPHS	•	PLAN 2	R110 8
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	00 00 00 00 00 00 00 00 00 00 00 00 00	110001 100001 100001 100001 10000000000	24-HGUR 149-HGUR 149-H• 176-50 2673* 3673*	72*H0UR 7355* 8055 217*27 36588* 45131*	TOTAL VOLUME 4424650 125300 125300 217-27 35584 45131
SUM C	9F 3 HYD	DRUGRAPHS	¥.	PLAN 2	R110 9
	PEAK 34011. 963.	325884 325884 325884 36584 16566 16566	24-HUUR 21704. 615. 10.07 255.77 43071.	10440UR 10450. 10450. 307.00 51698.	1014, VOLUME 17704, 17704, 12,09 307,00 51698, 63769,

				HYDRGG	HYDROGRAPH ROUTING	LING					
	38 00 a0	PROPOSED PUMPING PLANT ISTAG ICOMP 305		SITE IECON	ITAPE 0	JPLT	JPRJ PRJ	A M M M M M M M M M M M M M M M M M M M	ISTAGE	IAUTO 0	
	0.0 0.0 0.0	0.0000000000000000000000000000000000000	A V G	ROU IRES	PLAN 1 ROUTING DATA RES ISAME 1	A IOPT	0 W d H	IDVR 0	LSTR		
		NSTPS 1	NSTDL	LAG	AMSKK 0.000	× 000 • 0	15K 0.000	STORA *1.			
RAGES	0. 1200.	100000	* 0 0 0	00	00		• •		• • •	•••	
			STATION	Z O	305, PLA	305, PLAN 1, RTIO					
14.	1114 1500 1500	187. 897.	14. 225. 1078		00TFL0W 15. 262. 200.	17. 298. 1200.	222. 335.	12000 12000 12000	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		492. 1200.
1200.	1200. 1200.	1200.	12000 12000 13000		1200. 1200.	12000 12000 12000	12000	1200.	10001		655
Ŋ	un e	ທັດ	ທູ້ທຸ		STOR 5.	900	112.	11.	18 18 0	18. 40.	27.
	8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	1017		1030 691 910 910	1036 1036 755	585. 588. 588. 665.	1016 2017 2017	200 200 200 200	3 6 N 3 0 N 0 0	
	9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	1200.	24*HOUR 1200* 34*	72		TOTAL VOLUME 40227. 1139.			
	HOUS CUT	n Σ ← Σ u Σ la		4004 4004 4002	23814 23814 2937		W • •	1326-75 4103-			
			MAXI	MAXIMUM STORAGE	RAGE #	1036.					

Exhibit 3 29 of 43

# N N N N N N N N N N N N N N N N N N N	1098 1098 1454 1454 131			# 8 9 9 8 4 8 9 9 8 9 8 9 9 9 9 9 9 9 9 9	2000 M M M M M M M M M M M M M M M M M M	
11200. 1200. 1200.	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			#	0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10003.	470 M M M M M M M M M M M M M M M M M M M		400000 640000 640000	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	УОЦ UME 53692. 1520. 16.36 26.36
#### #################################	117 7411 10087 10087 10087	101AL	m	1000 4 2 3 4 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5	11 11 11 11 11 11 11 11 11 11 11 11 11	TOTAL 55. 004
##### ################################	11 6 11 6 11 6 11 6 11 6 11 6 11 6 11	1486.	PLAN 1, RTIO	2 10000 3 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	11. 1779. 1280. 3450. 2695.	UR 72 #HD 999 910 114 444 444 444 444 444 444 444 444 4
11800 1200 1200 1200 1200	5 TOR 1 5 S S S S S S S S S S S S S S S S S S	14000000000000000000000000000000000000	305, PL	12000.	STUR 10. 160. 1025. 3262. 3564.	24 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
17. 1200. 1200. 1200.	4 2 2 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AK 12000. 4. 32. 3. 33. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3	STATION	4 N W W W W W W W W W W W W W W W W W W	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	AK 6*HOUR 0. 12000 4. 34. 34. 34. 34. 34.
11 2000 12000 12000 12000	357. 1357. 1347. 5347.	# 0 M 0 M 0 M 0 M 0 M 0 M 0 M 0 M 0 M 0		# # # # # # # # # # # # # # # # # # #	2000 2000 2000 2000 2000 2000 2000	00 T T T T T T T T T T T T T T T T T T
13 863 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	00000000000000000000000000000000000000	THOUS CU		11111 000000 0000000 00000000000000000	2741 2741 3594 30583	
N N N N N N N N N N N N N N N N N N N	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			22.23 200. 2000.	76. 870. 870. 8587. 8187.	

Exhibit 3 30 of 43

MAXIMUM STORAGE #

	200000 200000 200000 200000	8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
	12005 12000 12000 12000	5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			MWWWWW 00000000000000000000000000000000	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
	00000000000000000000000000000000000000	311 294 314 3173 3173	. VOLUME 55761• 1579• 1.08 27.38 4611• 5687•		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	VOLUME 57963• 1641• 1.12 28.46 4793• 5912•
70 7	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0.0000 0.00000 0.000000 0.000000000000	HOUR TOTAL 269- 269- 1-08- 7-38- 6611- 687-		11111111111111111111111111111111111111	84140 95140 95130 95130 95130 95130 95130 95130 95130 95130 95130 95130 95130 95130 95130 95130 95130 95130 95130	000R TOTAL 66. 27. 12. 12.
PLAN 1, RTIO	17747 17800 17800 17800	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8	5904. PLAN 1, RTI	10000 10000 10000 10000	4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	000 72+HC 34. 8 34. 8 • 56 1 • 58 28. 37. 5913
305,	1200 1200 1200 1200 1200	\$108 14. 1625. 5246. 5883.	DUUR 0000 0000 0000 0000 0000 0000 0000	STORAGE = 305, F	0001 12000 12000 12000	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	HUUR 24*HG 2000 1200 234 120 234 14 234 234 234 234 234 234 234 234 234 23
STATION	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1184. 30040. 30040.	X • • • • • • • • • • • • • • • • • • •	MAXIMUM	1800. 1800. 1800. 1800.	250 250 250 2011 2017 215 215	AAXIMO A MAXIMO A MAX
	112001 120001 120000 10000	157. 946. 4800. 5904.	TOTI FOR SOUTH TO THE SOUTH TO		12000 12000 12000 12000	212. 1547. 7745. 9526.	O S S S S S S S S S S S S S S S S S S S
	12000 12000 12000 12000 12000 12000	1333 1333 1330 1330 1330 1330 1330 1330	INCH THOUS CU		112000 12000 12000 12000 12000	1135 1135 1135 1135 9485 9485	INCH THOUS OF
	12000 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 m m m m m m m m m m m m m m m m m m m			112000 12000 12000 12000	19. 137. 6798. 9423.	

44444 44444 40000 40000	00000000000000000000000000000000000000	44444 60000 000000	2000 2000 2000 2000 2000 2000 2000 200	
112004 12000 12000 12000 10000 10000	101 9 858 15206 15806 15273	4 1 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	141. 1505. 15046. 23618. 24937. 24505.	
200000 200000 200000	1589866 1589866 1589866 1589866 170986 1110 1110 1110 1110 110 110 110 110 11	00000 0000 0000 0000 0000 0000 0000 0000		6 510 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
000000 0000000000000000000000000000000	43. 7047. 14703. 1581. 15434. 15434. 1002. 15434. 11.16. 129.	10 7 12000 12000 12000 12000	63. 11499. 23040. 24912. 24912.	
11200. 1200. 1200.	### ### ##############################	15876. DW 148. 1200. 1200. 1200.	26 44 44 44 44 44 44 44 44 44 44 44 44 44	- MIN 0
1200. 1200. 1200. 1200.	### ##################################	305, 132, 1200, 1200, 1200, 1200,	765 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
86. 1079. 1200. 1200. 1200.	404 M M M M M M M M M M M M M M M M M M M	MAXIMUM STATION 1250 1200 1200 1200 1200	42. 534. 6153. 21103. 24804.	
8 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	102 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	12000. 12000. 12000. 12000.	41. 432. 4706. 20215. 24631. 24848.	SOOREHE BUNK
738. 1200. 1200. 1200.	28. 2045. 12099. 15657. 15657. 15744. 18744. TNCHES TNCHES THOUS CO M	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	23.73. 3.874. 1.918.5. 2.28.90.	I I I I I I I I I I I I I I I I I I I
586 12866 12866 12866	11286 11286 11286 11286 11386	123. 1200. 1200. 1200.	41. 270. 1790. 17990. 24311. 24912.	

	8 11 11 11 11 11 11 11 11 11 11 11 11 11	322 3272 3732 37310 38694			11 12 12 12 12 12 12 12 12 12 12 12 12 1	5000 5000 5000 5000 5000 5000 5000 500	
	20000000000000000000000000000000000000	2625° 23671° 36885° 38675° 38418°			12000 12000 12000 12000	259 2000 3000 3000 3000 3000 3000 3000 300	
	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	เหมพัพ	VOLCUM 130224 1790 31.004 5228 6448		11225 1225 1225 1225 1235 1235 1235 1235	3234° 3234° 29601° 50581° 53730° 53747°	1. VOLUME 04341. 1822. 1.24. 31.59 5320. 6562.
80	1200. 1200. 1200.	7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00	101 AL 101 AL 102 A 103 A 104 A 105 A 106 A 107 A 108 A	RTIO 9	112201 12201 122000 122000 122000	25629. 25617. 29518. 53646. 537646.	**HOUR TOTAL 1072** 30** 1.24 31.59 5320* 6562*
PLAN 1, RTIO	DW 12219 12200 12200 12200 12000	1392 1592 1592 3492 38514	HOUR 72-HOUR 200. 34. 1054. 356 31.024 4.14 5228. 381. 6448.	PLAN 1, RT	LUW 296. 1200. 1200.	2117 2117 21952 48670 53535	HOUR 72 34. 34. 56. 38. 40.14
305, P	195. 1200. 1200. 1200.	8108 1115. 12719. 33992. 38614.	900R 24# 114# 154 554 354 358 8408	305,	1200. 1200. 1200. 1200. 1200.	STOR 98. 1677. 18156. 47387. 53392.	HOUR 24
STATION	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	866 876 10135 38878 38648	PEAK 200. 34. 120 34. 34. 77.	STATION	11122001 1122001 122000 12000	1304° 14601° 15334° 53212° 5366°	0000 0000 0000 0000 0000 0000
	######################################	7848. 31546. 38115.	OOOTE TO		12000 12000 12000 12000	1144902 44002 44448 574488 534486 53446	S S S E F E
	12000 12000 12000 12000 10000	5 6 6 10 5 10 5 10 5 10 5 10 5 10 5 10 5	I I VOICE		400000 400000	82. 8760. 41814. 52706.	I NO HE
	11111111111111111111111111111111111111	61. 385. 4448. 37644.			12000 12000 12000 12000 12000	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	

				•••																			
				• •		•	380	9 9	582	20.	127		227.		0	• •	000	• •					
LSTR		• • •		0000. 8570.			320	~ ~	308	 14.	\circ	•	251		• •		• •	• •					
IOVR	STORA .1.	•••	F 0 7	960.		- 51	279	20	336	ŏ	93,	2.90	277.		o =		ó	•		1084	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	M 10 65	
a 6 ¥ a	15K		PDSCNT • 05040	æ F		c n	247	200	921.	7.	82.	601.	307.		0		0	•	TOTAL				
IOPT	° ° ° ° ° °	••	DATA T PANCST	•0009 •0009	2, RTIO 1	4		.00	397.	ທ້	~ -	7.	341. 132.		•	* *	0.0	• •	72-H0UR	18.	18.80	3165	
AN NO	AMSKK 0.000.0	••	PEANT PERCS	2000°	305, PLAN		•		138. 10.	40.				MPING	•		***		4.HOUR	33.	53.55	2283	
PLAN ROUTING IRES ISA	LAG 0	• •	PUMPING PMPON 1500.	1000.		3.4	190	1200	1138	ഗ ഹ	500	0	379	ā	00			0	A.		5.54	734	
0 • 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NSTDL 0		Σ O Δ 0	5000	STATION	. 7	405	10	M 4	ហ្វឹ	2000 0000		157.		00		00	•	•	1.			
000°0	S t bs	100000	PMPMX 100001	100		14	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	500	516.	េរភ	4 W	6	172.		• c		• •		PEA	0° ₹			
0 0 0 0 0 0 0 0	Ž	1200.		250.			. 0		-	•					.• .1			•	1		N E E	AC-FT	
a		• •		• •		-	107	1200	120 130 130 130		193	57.5	7 6 6 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		00	•		•				THOUS	
		STORAGE= CUTFLOW=		CAPACITYE			83,0	1200	1200.	'n	156.	548	207			0	0	•					

	72. 448. 1200. 1200.	40000 C 400	60000		0000 Mm	1111 1111 1111 1111 1111 1111 1111 1111 1111
	2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	+ 1			5.005 11200 12000 12000 12000	133339 133339 14007 1007
	12000 12000 12000 12000 12000 12000	116881 11688 11688 1883 1883 1883	VOUL 45044 1246 1246 1246 1246 1376	8 4 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	N 10000 N 10000 N 10000 N 10000	18. 172. 1171. 1171. 1419.
~	2000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8 97 97 8 994 8 99	00. 00. 00. 00. 751. 21. 2.187	, w	1200 1200 1200 1200 1200	13. 1522. 1666. 1489.
PLAN 2, RTIO	110000 10000 10000 10000	2 4 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	~	N N N N N N N N N N N N N N N N N N N	4 4 4 4 4	11 14 14 14 14 15 15 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16
305, PL	00TFLOW 18. 227. 1155. 1200. 1200.	3408 3405 3405 759	U 000000 N	DRAGE 305,	356. 1200. 1200. 1200.	STOR 10. 119. 692. 1585. 1450.
STATION	1944. 991. 1200.	448 W O O O O O O O O O O O O O O O O O O	0000 6 = HDUNR 8 0000 1000 1000 1000 1000 1000	595, 734, MAXIMUM S	28. 308. 1200. 1200.	9. 103. 1495. 1495.
			т и п о м А о ф			
	112000	0.000 W W W W W W W W W W W W W W W W W	၁၀၀၁¢ဝ ၈၈၈ ∑	FΣ	1111 1000000 1000000000000000000000000	87 87 1392 1465 1277
	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	43. 779. 846.	 200000	ACAF	2 28 2 13 0 1 2 0 0 0 1 2 0 0 0	1363 143 1438 1438
	552. 552. 1200.	184 735 475 473			######################################	1 1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3

00000			68	0000	3 .	1 N S		1247	0	0 4	0	00						
**************************************			100	M M M M	2	о от м м чо о м чо о	3 00 1	1 N	•	0 0	2885.	00						
L VOC 00000000000000000000000000000000000			00	000000000000000000000000000000000000000			3 77 (2 ~1 2 ~1	•	0	20	00	AL VOLUME	5405	1.04	26.54	5513.	
7 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 -		RTIO 4	55°	######################################	• 0 0 2 4		2 - - 2 C	W to	• 0	0.0	2885	• •	101		****	45.54		
NG 00 00 00 00 00 00 00 00 00 00 00 00 00	1625.	PLAN Z. RT	0W 45 548	# # # # # # # # # # # # # # # # # # #	3		1 00 1	36	ING			20	R 72*	•	0	381. 426		= 1705
0000 000 000 000 000 000 000 000 000 0	STORAGE =	305	007FL 41. 80.	* * * * 000000000000000000000000000000	v	S 14 0	ונהם	50 KG	₹ .			00	-72	-		3.54 16 595	. N	STURAGE
0000 0000 0000 0000 0000 0000 0000 0000 0000	MAXIMUM	STATION	- 3 ↔	2000 2000 2000 2000 2000 2000 2000 200	>	13. 13.	1517.	269	0	0	2885 5	0,0	EAK 6	00.	•	-, -		MAXIMUM
			M 2	0000	•	10.0	596	1336.	•		8	85		CFS 12	E L	Σ÷ L	Ē	
28 895. 00. 00. 00. 1 I I I I I I I I I I I I I I I I I I I			. V.	1200 1200 1200 1200 1200 1200 1200 1200	1600.	13.	ນ ໝ	~n .c.	0			00			O.H.	•	THOUS	
			0.0	11.200 12.000 10.000	~	20 TO	500	1484.	0		0 0 0 0 0 0 0 0	0						

M W W W W W W W W W W W W W W W W W W W	200 00 00 00 00 00 00 00 00 00 00 00 00		10000 M
11111111111111111111111111111111111111	4 4 4 4 4 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	40000 00 00 00 00 00 00 00 00 00 00 00 0
110 011 10 01 01 10 0 0 0 0 0 0 0 0 0 0	1200 200 200 200 100 100 100 100 100 100	2888000 2621 888500 2621 8850 2650 5750 5750	11111111111111111111111111111111111111
7853. 1200. 1200.	0 NOFNN3	2885. 2885. 2885. 2885. 2885. 77. 77. 61. 66.	6 11 11 12 12 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15
OM 7554.	1112000 120002 120002 12100 12100	2885. 2885. 2885. 2885. 2885. 0. 0. 0. 14. 72. 14. 14. 14. 14. 14. 14. 14. 14. 14. 14	PLAN 2, RTI 1087, 1200, 1200, 1200, 1200, 1200, 1200, 1200, 1200, 1200, 1200, 1200, 1200, 1200, 1200,
00TFL0 5683 12000 12000	1200. 220. 221. 1774. 2946. 1406.	PUMPING 0.0.0.2885.2885.2885.2800.2800.2800.344.344.345565.3554.3754.3754.3754.3754.3754.3754.375	305, PL/ 0UTFLOW 88. 953. 1200. 1200. 1200. 1200. 1200. 1200. 1200. 1200.
577. 1200. 1200.	200 W C	A 0 4	MAXIMUM STATIUN 828. 1200. 1200. 1200. 1200. 1200. 2146. 5391.
1224 1224 1220 1220 1230 1230 1230 1230 1230 1230	1200 100 100 100 2955 100 1071	TENET E CO	112000 12000 12000 12000 12000 1200 120
1111 1000 1000 1000 1000	M → L Q M Z	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12000. 12000. 12000. 12000. 1351. 53373.
2000 400 000 000 000 000 000 000 000 000	1000 0000 0000 0000 0000 0000 0000 000	000 K W W W W W W W W W W W W W W W W W	28. 1200. 1200. 1200. 1200. 1200. 148. 148. 55107.

N N N N N N N N N N N N N N N N N N N				90	000	0000	_	n o	1252	11154	10387		•	ου 00	ស្លេស ស្លេស ស្លេស ស្លេស ស្លេស	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				343	0021	000	1000	1144	964	11096.	10524. 8895.		.	Ø:	ស្លេស ស្លេ ស្លេ	
• • • • • • • • • • • • • • • • • • •	X00LUME 16646. 1666. 23. 14. 59858. 59858.			1200	00	000	• • • • • • • • • • • • • • • • • • • •	79.	778	10991	10653.		• •	885	N N N S S S S S S S S S S S S S	> 0 1 0 - 0 m 0
2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1018 1018 1018 1018 1018 1018 1018 1018	^		172.	1200	0000	•	57.	7 6 6 4 4 5 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5	10833.	10772. 9256.		• • • •	80	ທຸກທຸກ ໝູ່ສອດ ໝູ່ຄອດ ໝູ່ຄອດ ໝູ່ຄອດ	# * * * * * * * * * * * * * * * * * * *
	MUCOUR 72=HUCOUR 8400 9400 9400 9400 9400 9400 9400 9400	5936. PLAN 2, RTI	3. 0.	141.	1200	200	• ^ ^ 3	47.	539	10620.	10880,	်က်	• • • • • • • • • • • • • • • • • • •	2885	N N N 00 00 00 00 00 00 00 00 00 00 00 00 00 00	TO 7007
PUMPING 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	25.000 25.0000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.0000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.0000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.0000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.0000 25.0000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.0000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.0000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.000 25.0000 25.000	STORAGE NOST		30.	1200	1000	• ^ ^ 1	STOR 43	45.50	0353	10976,	ä	.	800	* * * * * * * * * * * * * * * * * * *	2 4 4 4 4 4
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	700 400 24 24 10 10 10	MAXIMUM MAXIMUM STATION		125.	1200	1200	• >	41 VI	387	10030.	11057.		00	2885	N N K B B C N B B C N B B C N	
• • • • • • • • • • • • • • • • • • •	0002-7			124.	1200	1000	*	41.	30	in.	11120.		.	885	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	INCHE CA A AC.			801.	000	1000) }	41.	2049	9217	11160.		ဝီ မ	2885 505 705 705	, , , , , , , , , , , , , , , , , , ,	
ာဘဝတ် ဟို ဟို တေဆာင် လေဆာင် လောက်လေ လောက်လ				123	1000	1200		41.	211.	οc:	11173.		• • ວ່ວ	0 1	N N N 8 8 3 1 N N N	

	# 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	228 13968 13968 22597 23130 21651	
	44444444444444444444444444444444444444	1602 1802 1802 1802 1803 1803 1803	0000 0000 00000 00000 00000
	MUNUNU 400000 300000 300000	115. 1343. 11027. 23312. 21992.	2885. 2885. 2885. 2885. 2885. 1771. 1771. 1.71. 5271. 6286.
99	NA N	10974 95164 23372 22156	2885. 2885. 2885. 2885. 2885.
AN Z, RTIO	209. 1200. 1200. 1200.	70. 8026. 20484. 23406.	28885 28885 28885 28885 728885 728885 728885 1048 1048 1048 1048 1048 1048 1048 1048
305, PLAN 2,	1200. 1200. 1200. 1200.	810R 73C* 6586* 19689* 23406*	PUMP ING R 88 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
STATION	11111 00000 000000 0000000000000000000	5566 18746 23346 23356	X X X X X X X X X X X X X X X X X X X
	1800. 1200. 1200. 1200.	61. 474. 4074. 17737. 23266.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	11111111111111111111111111111111111111	361. 3115. 3115. 16582. 228112.	2885. 2885. 2885. 2885. 2885. 2885. 1 NCHES AC. FT
	180 180 1800 1800 1800 1800 1800	361. 2398. 15323. 23016.	, , , , ,

VULP#1905040•			0 X I O X I	CAP COST 6	T FOOT SET	S NA			
			2865		108	330			
				OUTFL					
246.	246.	247	250.	259	283	338	457.	653	
1195	1200.	1200.	1200.	1200	-	1200.	1200.	1200	-
1200.	1200	1200.	1200.	1200.	1200	1200.	1200	1200	
1200.	1200.	1200.	1200.	1200	1200	1200.	1200,	1200.	
1200	1200.	1200.	1200.	1200	1200	1200	1200.	1200	
1200.	1200.	1200.	1200	1200.	1200	1200	1200	1200	
				S. C.					
C of	8	oc oc	7. 8		94.	113.	152.	8	
3005	10 3 30 3 30	674	200	1001	1360	1676	1816	2071	
3307	4427	5857	7573	6756	11739	14086.	16526	18985	N
23637	25730	27641.	29357	L. F	32183	33307.	34262	35065	, C
36256	36671.	36989	37228.		37507.	37561.	37569.	37541	*
37406.	37309.	37197.	37073		36802.	36655.	36503.	36346.	m
				GNIGNUG	CZ				
0	0	5	0			•	•0	0	
0	•0	•0			0	•0	2885	2885	
2885	2885	2885	2885	2885	2885	2885	2885	2885	_
SAAS.	2885	2885			2885	2685.	2885	2885	
2885	2885	2885			2885	2885	2885	28.85	
2885	2885	2885	2885		2885	2885	2885	2885	
				6*H0UR 24*	24*HOUR 72*	72-HOUR TOTAL	LVOLUME		
	U	Sign		1					
	S	8	34.			30.	1809		
	INCH	ES.		.14		1.23	1,23		
		ΣΣ		3.54		31,37	31,37		
	AC+FT	بالإ			2381, 5		5282		
	THOUS CO M	Σ				515.	6515		
			MAXIX	MAXIMUM STURAGE	37569				

AANCST 0.00000			
ADSCNT O.00000			
COMPUTATION IAQST 0 0			
DO DAMAGE T DGPRT 0.000			
7. 1.000			
EXPECTED ANNUAL NOMG ISAME	1 TYPE 2 0.000 10.500 15.000 55.000 50.0000 50.000 50.000 50.000 50.000 50.000 50.000 50.000 50.000 50.0000	77	31.21
N S S S S S S S S S S S S S S S S S S S			. 70
NFLOD 10	305 TYPE 1 0.000 37.500 1125.000 3155.000 5850.000 7055.000 10550.000	4 L 0 100000 1 1 1 1 1 1 1 1 1 1 1 1 1 1	301.7
Z ∢ M		A	315.88
30		. 프로그 :	315
	914110 1175 1175 1175 935 935 111835 AVERAGE	PR 81 P 7 III P 8 P R I B 1 I I I I I I I I I I I I I I I I I	DMG BFT
			O NNA NNA B
	A -Warwoored F	A A A A A A A A A A A A A A A A A A A	9 A V G . A
	A P D U C C C C C C C C C C C C C C C C C C	000 DAM 1 STOR 1 1 A B A A A A A A A A A A A A A A A A	
	2	T C - M a N a V a v a v a v a v a v a v a v a v a v	

	PEAK FLOW AND	AND STORAGE (E	C N S	F PERIOD) CUBIC FEE REA IN SQU	SUMMARY T PER SE ARE MILE	FOR MULTIPLE COND COUSIC S (SQUARE KI	PLAN-RATIC METERS PER LOMETERS)	C ECONOMIC SECOND)	COMPUTATION	8 20		
OPERATION	STATION	AREA	PLAN PLAN	ATIO 1	RATIO 2	RATIOS APP RATIO 3	KATIO 4 FLI	HATIO S	RATIO 6 1	RATIO 7	RATIO B	RATIO 9
HYDROGRAPH AT		35.10 90.91)	, , , , , , , , , , , , , , , , , , ,	1343. 38.02)(1343. 38.02)(1611. 45.62)(1611. 45.62)(2685. 76.033(2685. 76.03)(3759. 106,44)(3759. 106,44)(\$370. 152.06)(5370. 152.06)(8055. 228.09)(8055. 228.09)	11814. 334.54)(11814. 334.54)(17453. 494.20)(17453.	23628. 669.073 23628. 669.073
коитео та		35.10	- ~	1343. 38.02)(590. 16.72)(1611. 45.62)(661. 18.73)(2685. 76.03)(940. 26.61)(3759. 106.44)(1095. 31.01)(5370. 152.06)(1340. 37.96)(8055. 228.09)(1599. 45.29)	11814. 334.54)(3113. 88.15)(17453. 494.20)(8668. 243.74)(23628. 669.07) 10282. 404.42)
ROUTED TO	1030	35,10 90,91)	+ ~ ~ ~	941. 26.65)(529. 14.98)(1139. 32,24)(593. 16,80)(1940. 54.94)(853. 24.15)(2921. 82.71)(1018. 28,84)(4312. 122.10)(1250. 35.67)(6699. 189,70)(1535. 43,47)(10191. 288,58)(2601. 73,67)(15177 429.7736 7263.	20603. 583.423 12276. 347.633
НҮВЯОСРАРН АТ	20 (35.10 90.91)	- ~ ~ ~ ~	1343. 38.02)(1343. 38.02)	1611. 45.62)(1611. 45.62)(2685. 76.03)(2685. 76.03)(3759. 106,44)(3759. 106,44)(5370. 152.06)(5370. 152.06)(8055. 228,09)(8055. 228,09)(11814. 334.54)(11814. 334.54)(17453 494.201 17453 494.201	23628. 669.07) 23628. 669.07)
ROUTED TO	2030	35.10 90.91)	 ~ ~ ~ ~	941. 26.65)(941. 26.65)(1139. 32.24)(1139. 32,24)(1940. 54.94)(1940. 54.94)(2921. 82.71)(2921. 82.71)(4312. 122.10)(4312. 122.10)(6699. 189.70)(6699. 189.70)(10191. 288.58)(10191. 268,58)(15177 429.7730 15177 429.7730	20603. 283.423 20603. 563.423
НУВКОСКАРН АТ	30	10.00	,	453. 12.81) (453. 12.81) (543, 15,38)(543, 15,38)(905 25,63)(25,63)(1267. 35,88)(1267. 35,88)(1810. 51,25)(1810. 51,25)(2715. 76.88)(2715. 76.88)(3982, 112,76)(3982, 112,76)(5885, 166,57)(5883, 166,57)(7964. 225.52) 7964. 225.52)
3 COMBINED	30	80.20	_ ~ ~ ~	2219. 62.84)(1664. 47.13)(2676. 75.79)(1968. 55.74)(4563. 129.21)(3196. 90.51)(6859. 194.23)(4616. 130,72)(10154. 287.53)(6625. 187.60)(15693, 444,39)(9960, 282,04)(23748, 672,47)(14769, 418,21)(35345, 1000,86)(22446, 635,59)(48011. 1359.53) 34011. 963.08)
ROUTED TO	305	80,20	- ~ ~ ~	1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33,98)(1200. 33,98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200. 33.98)(1200° 33°98) 1200° 33°98)
			# → `N	EAK STORAG 1036. 1278.)(607. 749.)(GES IN ACR 1486. 1833.)(897.	E FEET (100 3587, 4424,)(1625, 2004,)(0 CUBIC ME 5904 7285)(1705	7ERS)** 11788,)(2967, 3660,)(15876. 19583.)(5936. 7322.)(24937 30760.)(11173 13782.)(38699 47734.)(23406. 28871.)(53876, 66255, 37569, 46341,

2885. 2885. 0.									7 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
• • •	6				824.	173,	* * * *		TBNFT8 900.
	OF OULLAR	378.	274	353.			BENEFITS		ANDMG 277.
•	PERFORMANÇE SUMMARY NURMALLY 1000'S OF DOLLARS)			* *	*	*	SYSTEM NET BENEFITS ****		ANDGBS 1177.
	AND PERFUR T = NORMAL	* *	CEMENT COST	TTIONS * *	16) × × ×	* * *	- MAXIMIZE		TANCST 742.
• 0	SYSTEM COST AND SAME AS INPUT :	* * * * * * * * *	AND REPLACEMENT	EXISTING CONDITIONS OPTIMIZED SYSTEM *	REDUCTION (BENEFITS)	* * * * * * * * * * * * * * * * * * *			ANOMPR 301.
•	SYIND SYIND	CAPITAL COST * * * * * * * * * * * * * * * * * * *	ANNUAL COST * *			SYSTEM NET BENEFITS	***** OPTIMIZATION OBJECTIVE		ANFCST 440.
•			SYSTEM ANNUAL O,M,	VERAGE ANNUAL DAMAGES	ANNUAL DAMAGE	MNUAL SYST	 I-60 ***		TFCST 8740.
110		TOTAL SYSTEM	OTAL SYSTEM	VERAGE AN	VERAGE AN	IVERAGE ANNUAL			

EXHIBIT 4

SIZING RESERVOIR AND PUMPING PLANT (Hydrologic Performance Constrained)

				065	3000	2720	5 4 5 4	3 :A			R = REVISED	()= REVISED	•	1120	7200					Ų		6480				4.7	•	:		004	3000	2720	280
•	a 10 • 0 • 0 • 0 • 0 • 0			: ∩	920		n 0						0	1105	000		٥٠			ÿ	•	5620		•		0.4		•				3330	
	3,23			-	•	3980	- 15	\ \?				9	15500	100	53					•		4800		P.			a .			2.7	Š	3980	0.4
	0 8 8			190	1040	0097	0 O	٤,				- F	11500	1075	4950		1	6300	24000	•		4220		3		O .	7.6			190	1040	0097	ر د د
	1.50			8	910	5100	n 99	Š	N		-	100	0006	1060	4350			3080	10250	برد - ارد	000		21000		-	N =	• •			5 80	910	5100	()
	000			30	70	5370	1	2		•	0	i.	0089	1045	6	TON REAC	-	2135	919) v	70	2280	15100	۳.	ر د		, 14	27.8		Š	078	5370	443
	0.70		M INFCOM	33	800	5360	25	î		-		975.0	5200	1030	3000	MODIFICAT		076	2020	- S.		1740	-	~	∾ <i>1</i>		,	23.0		33	90	5360 • 550	ה מ
	• \$ • 0		25 . 01	33.1	760	5050	120	35	3F0V078			200	0007	1015	0072	HANNEL		475	1020	د د د	-	138	6	7	۰ •	, e		•	15.	2	760	5080	> 1
- 0	0.30	0,	7	24	710	1840	160	38	110 1350 pr	: :		0	0	0	000	_			00.2			*	3	0	•	9.0	•	15.6	> U	72	=	1840	,
\$6)^	5000 • 5000	0	֓֞֝֞֝֞֝֞֝֝֟֝֝֝֟֝֝֝ ֡ ֓	7.2	060	2200	215	07	neuer .			2000	•	765	> -	POTEN		•	0 2	> .	. 25		075	0	•		0	13.7) -	24	099	000	

									<u>LEGEND</u>	N = NEW INPUT DATA		() = KEVISED INPUT DATA												
	38.	6480	16.4			1000	000	٣.	₹°												7007	76000	11250	3 & S
•		2620	13			247	1110	25	<u>.</u> .			-									.005	20000	10650	240
	٠,	4800	e. ::				1330	155	20										00001	> D	.01	37000	0006	300
6300 24000	٠.	4220	9 •	-		. 63 7	1530	800	2 O		-		•		•				7860		₹0.	28000	7050	300
3080 10250		3200 3200 21000	50.1			2 Y	1690	200 200 200 200 200 200 200 200 200 200	32		~							7020	0000	(A)	\$0.	20000	5850	202°2
2135 6100	, S	2280 15100	2 4 4 C			. 1. 280	1810	330	3=	P 00L	ļ.	0						• 023	2300	(2009))°1°	12500	3150	Sol
2020 2050		1740	30.28	TO FUREBAY POOL		265	1800	2 3 3	; #	TO FOREBAY POOL	LANT SIT	-			-			001	1600		<u>ن</u> ٥٠	7000	1125	0.30
475 1020	- n c	10000	9.0	LOW TO FO	10.0	255	1650	 	•	INFLOW TO	PUMPING PLANT		10000	1200		100001	1200	000	1000	N	• 45	0007	75.	•
0 0 0 0 0 0	ູ້ທີ່	1130 8540	23.1	o z		230	1540		<u>.</u>	N N N N	ROPOSED P			1200		400	1200	25.0	670	<u></u>	09	0052	37.5	n •
	າ ∿	1030	20.3			್	1320	20	2,	- 0	_ &		-0	•		.0		0 G		305	•	0	0(` &

	Z ₀	0	01V 8 %		1RG FLOW 1200,000	TRG FLUW 5000,000	08J 0EV 931,715	TRG FLOW 1200,000	TRG FLOW 5000,000	1004,728
	AC IPLT IPRT NSTAN 0 0 0 3 0 0	PERFURMED 10= 1 1.50 2.20 3.25	ZATION DIV 7 VAR 6 DIV 7 C 0.0 C CNST	TO	INT FLOW 1224,953	INT FLOW 7762,425	VARCH) VARCH13 .500E+04 .500E+04	INT FLOW 1225.118	INT FLOW 7815.023	VARCH) VARCH1) . 495E+04
FLOOD CONTROL SYSTEM CUMPONENT OPTIMIZATION SIZING RESERVOIR AND PUMPING FLANT HYDROLOGIC PERFORMANCE CONSTRAINED	B SPECIFICATION Y IHR IMIN METRC O 0 0 R NWT LROPT TRACE 7 0 0	NALYSES TO BE 2 NRTIO= 9 LRT	SYSTEN OPTIMIZ VAR 5 V 0. ANORM	FIXED COST INPUT FCAP 0. 0.0000 0. 0.	1STA 1050	15TA 305	NC W W	18TA 1030	1STA 305	E C
TRUL SYSTEM CUMPONENT OPT SERVOIR AND PUMPING PLANT C PERFORMANCE CONSTRAINED	JOH NHR NMIN IDAY 1 0 JUPER		VAR 3 VAR 4							
FLOOD CONTR SIZING RESE HYDROLOGIC	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	R110S#	VAR 1 VAR 2 5000.							

*5000°

FLW DEV

FL# 085

FLW DEV

FLW 08J 931,715 FLW DEV

FLK CBJ

TANCST ANDMG OFTN(NC) 685,365 334,300 ,951E+06

FLW DEV 2815,023

FLW 08J

TANCST ANDMG OFFN(NC) 683,630 336,115 ,103E+07

OBJECTIVE FUNCTION FOR VARIABLE 1

FLW DEV 2867,667

FL* 08J 1082,021

TRG FLUW 5000,000

INT FLOW 7867.667

1STA 305 TANCST ANDMG O FININC)
681,895 337,930 ,110E+07

.490E+04 .490E+04 1082.021

NG M ML

.1104E+07

.1026E+07

FLW DEV 25,233

FLW 09J

TRG FLUM 1200,000

INT FLOW 1225.233

1STA 1030

Exhibit 4 3 of 28

			15TA	INT FLOW 1214,982	TRG FLUW 1200,000	000°	7 L M DE V
			ISTA 305	INT FLOW 6997.027	TRG FLUW 5000,000	FLN 083	FLW DEV 1997.027
VAR 1 ADJ FRUM	5000,00 TO	5826.40	ω Σ Σ 2	VAR(M) VAR(M1) *500E+U4 .583E+04	UBJ DEV 254,482	TANCST ANDMG 178809	0 FTN(NC) ,260E+06
			1030	INT FLOW 1214,982	TRG FLOW 1200,000	000°	× 10 € 7 € 1 € 1 € 1 € 1 € 1 € 1 € 1 € 1 € 1
			181A 305	INT FLUW 7061.828	TRG FLOW 5000,000	FLW 083 289,154	FLW DEV 2001,828
			E O	.495E+04 .583E+04	083 DEY 289,154	TANCST ANDMG 704,862 309,993	0 FIN(NC)
			18TA 1030	INT FLOW	TRG FLUW 1200,000	PLW 085	FLW DEV 14,982
			181A 305	INT FLOW 7126.578	1RG FLUW 5000,000	FLW UBJ 327,224	FLW DEV
			E O	VAR(M) VAR(M1)	08J DEV 327,224	TANCST ANDMG 701,468 311,125	0 FTN(NC)
OBJECTIVE FUNCTION FOR VARIABLE	OR VARIABLE 9	*2596E+06	.2945E+06	.3324E+06			
			151A 1030	INT FLOW 1214,982	TRG FLUW 1200,000	FLW UBJ	FLW DEV 14,982
			ISTA 305	INT FLOW 6407,512	1RG FLUW 5000,000	FLW 08J	FLW DEV
VAR 9 ADJ FROM	5000,00 10	25.855	E T	VARCM) VARCHI) SB3E+04 SSSE+04	08J DEV 46.763	145.858 285,003	G FIN(NC) 492E+05
			1STA 1030	INT FLOW 1215,496	TRG FLOW 1200,000	FLM 083	FLX DEV 15.408
			1STA 305	1NT FLUX 6549+351	TRG FLCW 5000,000	FLW 08J	FLW DEV
			NC S	VARCM) VARCM1)	083 DEV 53.039	TANCST ANDHG 744,354 286,520	0 FIN(NC)
			1STA 1030	INT FLOW 1216.060	TRG FLOW 1200,000	FLW 08J	FLW DEV
			15!A	INT FLOW 6391.365	18G FLOW 5000,000	FLW 08J 59,963	FLW DEV 1391,365
			NC W WI	.571E+04 .555E+04	08J DEV 59,963	TANCST ANDMG 742,870 288,041	0 FTN(NC)
OBJECTIVE FUNCTION FOR VARIABLE	FOR VARIABLE 1	.4924E+05	,5571E+05	•6285E+05			

VAR 1 ABJ FRUM 5826.40 TO						
1 ADJ FRUM		181A 305	INT FLOW 6019,769	TRG FLUW 5000.000	FLW UBJ 17,303	FLM DEV 1019.769
	6360	1 6 2 0	.555E+04 .636E+04	08J DEV 17,303	TANCST ANDMG 759,453 272,327	0 FIN(NC) .189E+05
		181A	INT FLOW 1212,351	TRG FLU# 1200,000	FLW CRJ	FLW DEV 12,351
		ISTA 305	INT FLOW 6083,313	TRG FLUW 5000,000	FLW CRJ 22,036	FLW DEV 1083,313
		E O	VAR(M1) VAR(M1) .550E+04	08J DEV 22,036	TANCST ANDMG 755,682 274,393	0 FTN(NC)
		1STA 1030	INT FLOW 1212,351	TRG FLUM 1200,000	FL# 085	FLW DEV 12,351
		181A 305	INT FLOW 6146,839	186 FLUW 5000,000	FLW 08J	FLW DEV
		NC OR W	.544E+04 .656E+04	083 DEV 27,678	TANCST ANDMG 751,912 276,459	0 FIN(NC)
OBJECTIVE FUNCTION FOR VARIABLE 9	,1889E+05	.2373E+05	*2949E+05			
		1STA 1050	INT FLOW 1212,351	TRG FLOW 1200,000	000* 180 HTs	TEN DEV
		ISTA 305	INT FLOW 5731,269	TRG FLUM 5000,000	FLW 08J	FLW DEV 731,269
VAR 9 ADJ FRUM 5553.52 TO	5818,71	ω ω ω υ υ υ	VAR(M1) VAR(M1)	083 DEV 4,576	777,459 262,641	9 FTN(NC)
		15TA 1030	INT FLUW 1212,486	186 FLOW 1200,000	000°	FLW DEV
		181A 305	INT FLOW 5756,224	1RG FLUW 5000,000	FL# 08J	756,224
		N N N N N N N N N N N N N N N N N N N	*630E+04 \$582E+04	08J DEV 5.233	TANCST ANDMG 775,838 264,030	O FIN(NC)
		1STA 1030	INT FLOW 1212,670	186 FLOW	FLW OBJ	FLW DEV 12.670
		& ± 0 € € € € € € € € € € € € € € € € € €	INT FLOW 5782,138	TRG FLUM 5000,000	FLW URJ 5.988	FLW DEV 782,138
		20 X X X X X X X X X X X X X X X X X X X	.623E+04 .582E+04	083 DEV 5,988	TANCST ANDMG 774,217 265,434	0 FTN(NC)

			184 184 1030	1NT FLOW 1212,494	1200.000	FLW 085	FLW DEV 12,494
			151A 305	INT FLOW 5587,516	TRG FLOW \$000,000	7 9 0 8 7 4 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	FLW DEV
VAR 1 ADJ FROM	6360,80 TQ	6757,05	E O	.582E+04 .676E+04	08J DEV 1,906	TANCST ANDRO	T SOSE+OF
			18TA 1030	INT FLOW 1212.494	TRG FLOW 1200,000	000°	FLW DEV
			191A 305	1NT FLOX 5650.189	FRG FLOW 5000,000	FLW 08J	FLW 0EV 650,189
			E O	. \$76E+04 . 676E+04	08J DEV 2.860	783.663 256.439	5 0 FTN(NC)
			18TA 1050	INT FLOW	TRG FLOW 1200,000	000°	FL# DEV
			ISTA 305	INT FLOW 5712.839	TRG FLOW 5000.000	FLW 081	FLW DEV 712,839
			Z O	.570E+04 .676E+04	08J DEV	TANCST ANDMG 779.712 258.607	D FINCHES
OBJECTIVE FUNCTION FOR VARIABLE	FOR VARIABLE 9	.3028E+04	.4014E+64	.5328£+04			
			4 - 8 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	INT FLOW	TRG FLOW 1200,000	000°	FLW DEV 12,494
			4 T S S S S S S S S S S S S S S S S S S	INT FLOW 5430,135	TRG FLOW 5000,000	F.L. 08J	FLW DEV 430.135
VAR 9 ADJ FROM	5818,71 TO	5,778	NC P	VAR(M) VAR(M1) .676E+04 .596E+04	085 0 28 0	TANCST ANDMG 797.527 249.265	S 0 FIN(NC)
			18-18-18-18-18-18-18-18-18-18-18-18-18-1	1212,365	180 FLOW	FLW 083	FLW DEV 12, 365
			181A 305	INT FLOW	TRG FLOW 5000,000	FLW UBJ.	FLW DEV 453,915
			-0 E E -1 U Ni Z	.669E+04 .596E+04	087 087	TANCST ANDMG 795.780 250.624	6 O FINCNC)
			1030 1030	8907	18G FLOW 1200,000	FLW 08J	FLW DEV
			181A 305	INT FLOW 6477-721	TRG FLDW 5000,000	FL 083	FLW DEV 477,721
			NC W	.662E+04 .596E+04	08J 0EV	TANCST ANDMG 794,039 251,997	6 G FINENC)
OBJECTIVE FUNCTION FOR VARIABLE	FOR VARIABLE 1	.1620E+04	.1757E+04	•1918E+04			

The Author Control of Control
13956+0
Section 1

		Σ Σ υν	.705E+04 .503E+04	08J DEV	308,501 241,846	TILER+OR
		181A 1030	INT FLOW 1212,424	1200,000	FLW 08J	FLW DEV
		HOTA NOS	INT FLOW 5294.204	TRG FLUW 5000,000	FL# 084	FLW DEV 294.204
		NC # M1	VAR(M) VAR(M1)	06J DEV	TANCST ANDMG	0 FIN(NC)
OBJECTIVE FUNCTION FOR VARIABLE 1	,1117E+04	.11436+04	.1176E+04			
		151A 1050	INT FLOW 1214,815	TRG FLOW 1200,000	FLW URJ .	FLM DEV
		SOS	INT FLOW 5182,446	TRG FLOW 5000,000	FLW 083	FLW DEV
VAR I ADIF FROM 7116 72 TO	**************************************	NC W WI	VARCM) VARCM1) *603E+04 .754E+04 .		1ANCST ANDMG 815,324 236,794	D FIM (NC)
		18TA 1030	INT FLOW 1214,815	186 FLDW	FLW CBU	FLW DEV
		1STA 305	INT FLOW 5182,446	TRG FLOW 5000,000	FL* 09J	FLW DEV 162,446
		E C	VAR(M) VAR(M1) .603E+04 .734E+04	OBJ DEV	1ANCST ANDME 615,324 256,794	*107E*04
		181A 1030	INT FLOW 1214,815	TRG FLOW 1200,000	000°	FLW DEV
		1STA 305	INT FLOW 5247,090	TRG FLUW 5000,000	090°	FLW DEV 247.090
		NC O X	VAR(M) VAR(M1) .597E+04 .734E+04	UBJ DEV	811,224 239,021	0 FTN(NC) 8111E+04
		1STA 1030	INT FLUW 1214.815	TRG FLUM 1200,000	000°	FLW DEV
		181A 305	INT FLOW 5311,713	TRG FLOW 5000,000	FLW OBL	FLW DEV 311,713
		E O	VAR(M1) VAR(M1) .590E+04 .734E+04	08J DEV	TANCST ANDMG 807,133 241,265	O FINCHC)
OBJECTIVE FUNCTION FOR VARIABLE 9	.10715+04	.11136+04	.1207E+04			
		1STA 1030	INT FLOW	TRG FLUW 1200,000	000 * TH	FLW DEV 14,815
		181×	1NT FLOX 5162,435	TRG FLOW 5000,000	FLK DBJ	FLW DEV 162,435
VAR 9 ADJ FROM KA25-26 10	6044.14	NC W	VAR(M) VAR(M1) .7548.04 .6046.404	06J DEV •011	TANCST ANDMG 816.613 236.138	. 105E+04

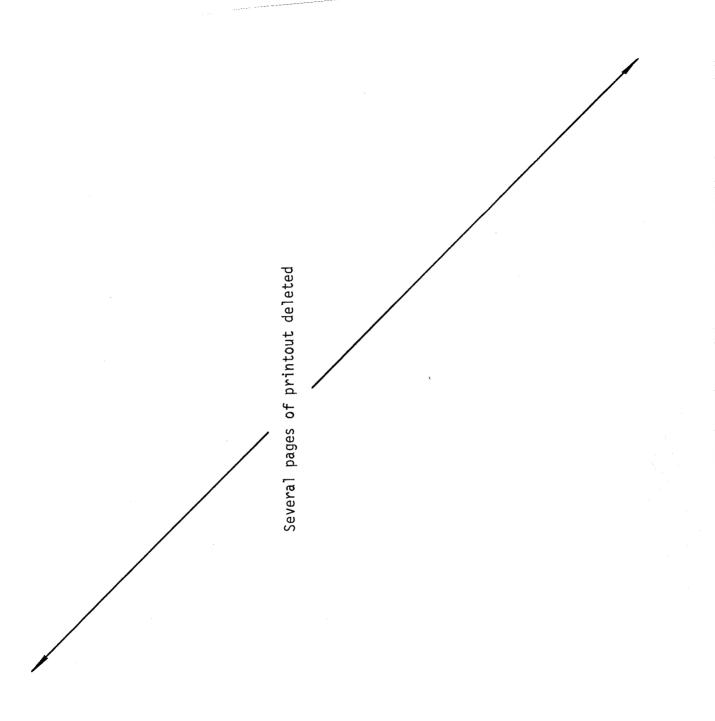
INT FLOW TRG FLOW FLW UBJ FLW DEV 1214,415 1200,000 14,815	INT FLOW TRG FLOW FLW UBJ FLW DEV 5162,435 5000,000	1) VAR(M1) GBJ DEV TANGST ANDHG G FIN(NC) 34 .604E+04 .011 816.613 236.138 .106E+04	INT FLUH TRG FLUM FLW 06J FLW 0EV 1214.389 14.389	5184,776 5000,000 FLW 08J FLW DEV	1) VAR(M1) OBJ DEV TANCST ANDHG O FIN(NC) 34 .604E+04 .019 814.895 237.413 .107E+04	1213.868 1200.000 13.868	S207.377 5000,000 +LM DRJ FLW DRY	4) VARCM13 08J DEV TANCST ANDMG 0 FTN(NC) 34 .604E+04 .030 813,176 236,682 .108E+04		INT FLOW TRG PLOW FLW CBJ FLW DEV 1215,736 15,736	5128.678 5000.000 128.678	04 .745E+04 .005 819.310 234.183 .106E+04	INT FLUM 186 FLUM FLW 083 FLW DEV 1215.736 1200.500 15.736	INT FLUW TRG FLOW FLW 09J FLW 0EY 5128.678 5000,000 .005 128.678	M) VAR(M1) OBJ DEV TANCST ANDMG G FIN(NC) D4 .745E+04 .005 819.310 234.183 .106E+04	INT FLOW TRG FLOW FLW ORJ FLW DEV 255:130 15.130	5150,515 5000,000 FLW UBJ FLW DEY
1030 12	151A 10	M MI VAR(M)	1974 In	18TA IN 305 51	M1 VAR(M)	ISTA IN	1STA IN	M1 VAR(M)	.10838+04	181A 17	151A IN 305 5	M1 VARCM) 1 .604£+04	ISTA I	181A 11:	M MI VAR(M)	1030	15TA 305
		NC T			E T			E-UMZ	+1072E+04			N C		+4	N N		1
									.1065E+04			2452.02					
									FOR VARIABLE 1			7336,88 10					
									OBJECTIVE FUNCTION FOR VARIABLE			1 ADJ FRUM					

.1062E+04

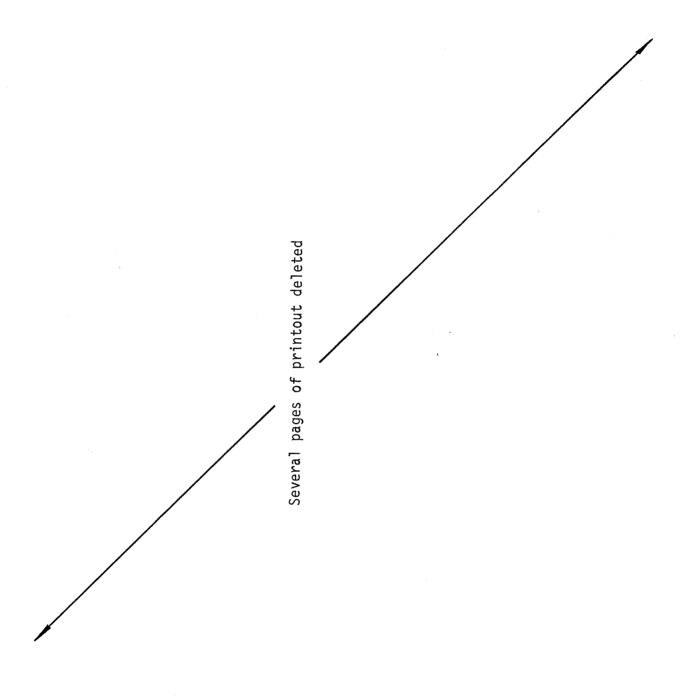
SUB-AREA RUNUFF COMPUTATION
Ow IECON
PREVIOUSLY GENERATED HYDROGRAPHS READ FROM TAPE
13
210.
57.2

					11200		30000°			- M. P.	* m	 		743	0.70		. 00	
IAUTO					1105.		24199	: -							1393. 14			
ISTAGE		LSTR		EXPT 0.00	15500 1090 5550		19092,											
INAME T	1 0 > x o	IOVR	STUHA #1.	ELEVT 975,00	500. 075.		in o		4	141	100 CV	288 100 100		727	1565	952	795	AL VOLUME 16071: 472: 174: 1378: 1378:
JPRI	8 0 8 8	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	15%	00.00	=-7		FUNC		•	- Nu	536	319,		122.	1322	1289	903.	UR 101AL 744
7 Je L 0	1001 0	1001	× 000 • 0	RDSCNI .0504	1050,		11320, 15711,	2. RTIO		111.	0.000 0.000 0.000	353. 128.		720.	267.	519.	813.	72*HUUR 8 8 8 14 1700
TAPE O	I SAME	LAN Z ING DATA ISAME	AMSKK 0.000	RESERVOIR DATA DW RANCST	6800. 1045. 3600.		310RAGE 7528. 1732.	110, PLAN	OUTFLOW				STOR	.		•	016. 823.	24 HOUR 1103 128 1
IECON	PLAN ROUTING IRES ISA	PLAN ROUTING IRES ISA	LAG	RESER COOM 00.00	5200. 1030. 3000.	752ª	97NTHETIC 4173. 1299,										-	582. 16* 16* 3.92. 3.92. 3.92. 3.92.
OIR ICUMP	9 0 0 ° 0	0 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NSTDL	7 × × × × × × × × × × × × × × × × × × ×	1015.	AGE OF	\$ 2053. 866.	STATION		• • • • • • • • • • • • • • • • • • •	2 to 0	432. 156.		719	1130	1370	1049 835	PEAK 588. 17.
RESERVOIR ISTAG ICU	000000	000°0	NSTPS 1	ELEVL 975.00		AT STORAGE				9 4	5.80	173.		719.	1059	1389.	1083.	
PROPOSED	0.0	0°0 8\$01b		CO9, 00 9	1500.	1049,96	1049			, e	360 585	191.		719.	992	405.	862.	CFS CMS INCHES INCHES ACTIT
				CAPMN 0, 20	* 6 9 6	ATION IS	714.											
				0.000 C	CAPACITY# ELEVATION# CUST#	LET CREST ELEVATION	STORAGES			Š	0 x x x x x x x x x x x x x x x x x x x	577		719	930.	1409.	1152.	

MAXIMUM STORAGE =



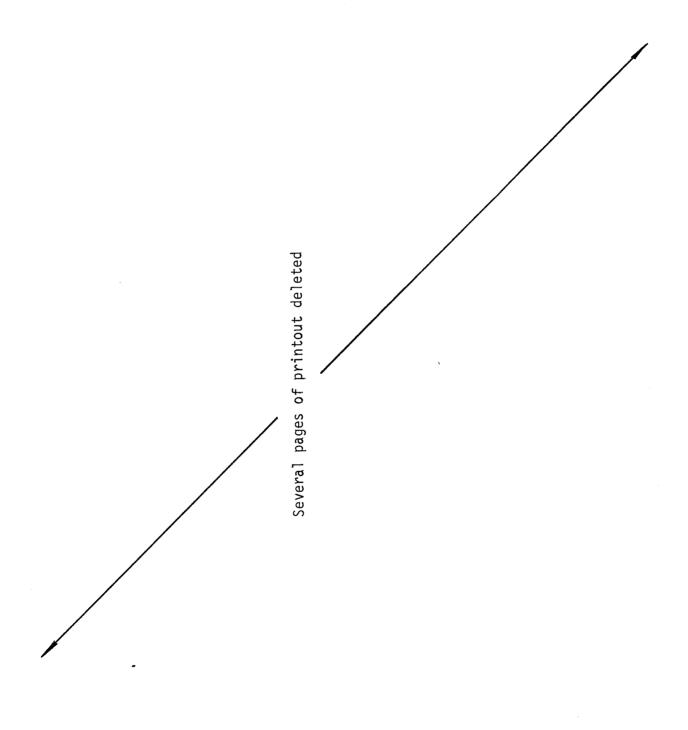
			RESERVOI 7526	c	CAP COST 3848.	TOT ANN S					
1006 14750 14752 1631	106. 675. 1659. 2819. 1615.	1068 4684 11985 2310	106. 858. 8907. 10633. 1886.	123	ð	11344 20574 30653 17065 1554	182. 1013. 6957. 1693.	10000 10000	1182. 10747. 1927. 1562.		
796. 1413. 1540. 11550. 6747.	796. 1610. 6955. 17205. 7872.	1996- 1818- 10773- 7711- 6507-	798. 2034. 9799. 10346. 7577. 6388.	80876 9997 7488		618. 2501. 11657. 9553. 7545.	855. 2774. 12133. 7220.	938. 123111. 12316. 7107. 5917.	36010 36010 386010 88400 58010		**************************************
	TNCHES ACTT		PEAK 69524 69524 1500 1000 1000 1000 1000 1000		24-HUUR 876-8- 876-8- 836-89- 17400-	72-HOUR 4122. 117. 10.92 277.47 20450. 25225.	TATO.	247316. 7003. 10.92. 277.47 20450. 25225.			
				AQ. Y	**************************************		4 4 4 4 4 4 4 4			**************************************	
	PUTENTIAL I	IAL CHAN 187A0 1030 CLUSS	STAG ICOMP IECON. 1030 1 1 1 ALL PLAN LOSS AVG IRES *000 0.00 1	ICATION IECON ALL PLAN ROUT IRES	ION REACH 1 0 1 PLANS HAVE SI ROUTING DATA 1.5	JPLT JPLT SAME A IOPT	LPRT C C C C C C C	H NAME IDVR	18 A A B B B B B B B B B B B B B B B B B B	1AUTO 0	
00	2 2 3 3 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	NSTPS 0.	NSTDL 0 475.	LAG 0 940.	ANSKK 0.000 2135	× 00.00 3080 10250 10250	0,000 6300,	810x			



L FLUGD DANAGE CUMPUTATION TRGT DGPRT IAGST ADSCNT AANCST 1200. 1.000 0.00000 0.00000							1000 100 100 100 100 100 100 100 100 10				000.6		27 • 860 · · · · · · · · · · · · · · · · · · ·			, i	>								7. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.		<i>-</i>										
CTED ANNUAL ISAME		0000	٠.	•	000	000	90.00	000	000	000	000	500 . 2	000	THIS DAT			TYPE	000	1.73	2,02	82.5	. ac	0.00	72.	10,02		C 7071	00.0	00.0	00.0	00.0	77.	3	4		-	
E X P	Z		_						-	 	: ===	0 7	1,500 15.	DAMAGES FOR	PLAN 1		TYPE	00.0	0.7	.31	. 53		.0.	.02	1.59	D. AN	1 UO > 1		00.0	00.0	000	3 P	90	\$ 0 °	•	.05	N N
STA NFLUD	1030													ANNUAL	ON 1030		SUR	000	- 3 - 5 - 5 - 5 - 7	6.65	7.73	5.54	0.4	99	33.58	IN 1050	1	6000	00.0	00.0	00.0		1016	06		• 54	#5. #.54
N -	STATIC												50.100	AVERAGE	STATI	PROB	INT	286	1.752	1.072	785	365	037	010	DMG	∵ 02	908d		-		-						_
	IC DATA FOR											7	020 15130	DJUSTMENT OF	, L	EXCD	FRED	000.9	500 200 200 200 200	1.769	867	.323	2601610		AVG ANN	OUD DAMAGES FOR	EXCO	FLOW FRED	504.00.000	847. 3.097	1008. 1.709	257	* * * * * * * * * * * * * * * * * * *	9277	•	506.	206

教教会在女女女女教教

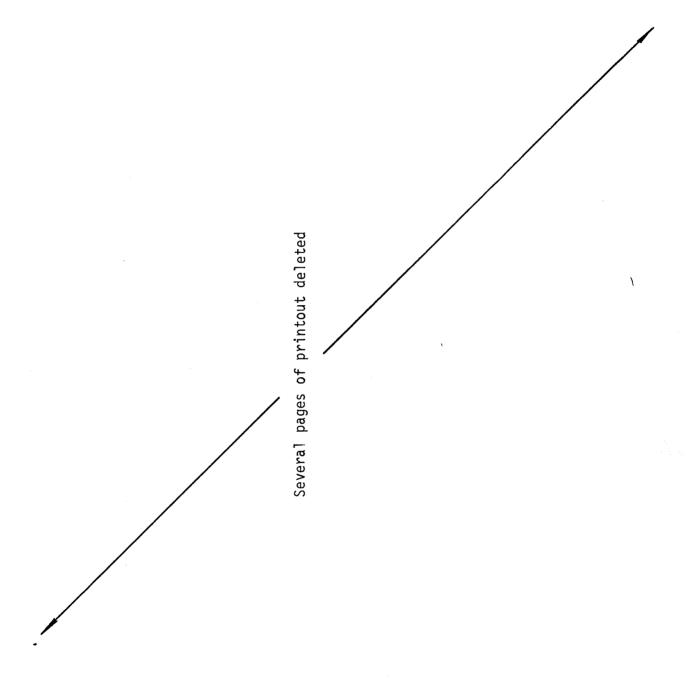
1AUT0 0	5 72 72 75 75 75 75 75 75 75 75 75 75 75 75 75	· · · · · · · · · · · · · · · · · · ·	ZAUTO 0			.					
13 A LE 17	4.4.8 Virginia Virgin	## ## ## ## ## ##	ISTAGE TA	-4 -2 -2 -2 -3 -4		• •					
0 0	7 APE 300.00.00.00.00.00.00.00.00.00.00.00.00.	· · · · · · · · · · · · · · · · · · ·	TO O	P IDVR	STORA	6300. 24000.		101AL VOLUME 17369- 492- 19-19- 1436-			TOTAL VOLUME 20842, 590, 23,38 1723, 2126,
	PHS READ FROM 1 21. 228. 260. 275. 1150. 151. 151. 151. 151. 151. 151. 1	**	NG JPLT JPRT	SAME A IUPT IPMP 0 0	XX T X 00000000000000000000000000000000	5080. 10250.	1, RTIO 1	72-HUUR 7 269. 88. 19.49. 1456. 172.	434.	1, RTIO 2	72°HOUR 7 347° 10° 23°38 23°38 23°38 2123°
~	AYDROGRA	****	HYDROGRAPH ROUTING YPASS REACH IECON ITAPE J	ANS HAVE	40		2050, PLAN	24.HQUR 613. 17. 16.55 18.55 18.51 18.17.	# 350 4 %	2030, PLAN 1	24-HDUR 733. 733. 21. 19.73 1454.
c	11.Y GENERATED P 8. 12 20. 210 1340, 1341 1341, 244 1541, 1541 1541, 1541 1541, 1541		HYDROC AND/OR BYPASS ICOMP IECON 1 1	ALL PLARING AVG IRES	100	2050.	4	6 HUUR 907 26 - 26 6 - 10 555 - 355	MAXIMUM STORAGE	STATION	6=HUUR 1091: 31: 31: 7:34 7:34 541:
2	PRF V10USLY 7. 20. 190. 1370. 1385. 1365. 30. 8	***************************************	POTENTIAL LEVEE AN ISTAN IC 2030	0 000000	NSTPS 1	1020		9 9 8 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			PEAK 1139. 32.
	11786 4450 4600 100		POTENTI	0°0 0°0				CFS CMS INCHES ACET THOUS CU M			INCHES INCHES ATTHOUS OU THOUS
	**************************************	****				• 0 • 0 • 1 • 0 • 0					



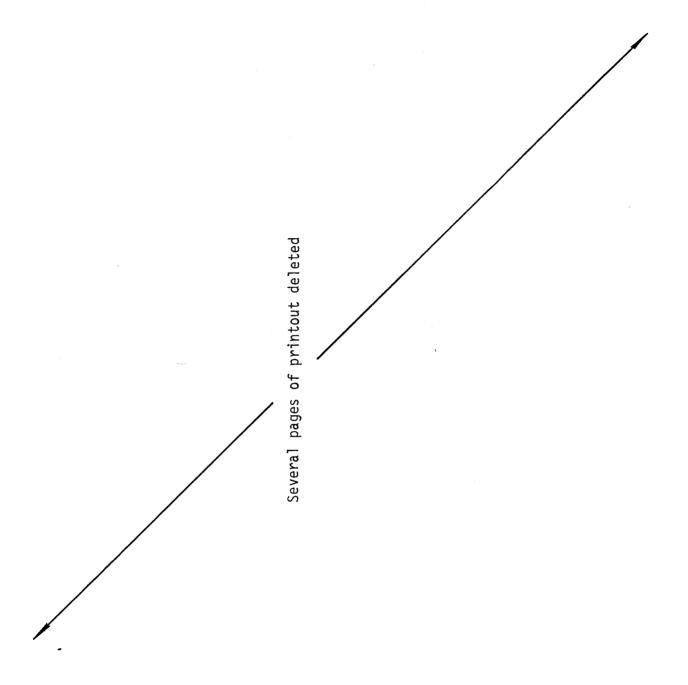
		1 S 1 S 4 S 5 S 5 S 5 S 5 S 5 S 5 S 5 S 5 S 5	NFLUD 16	EXPECTED NOWG IS	ISAME	11.00 10.00	0.000 0.000	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ADSCNT 0.00000	AANCST 0.00000	11.98
\sim	ATA FUR	STATION 2	030 PLAN	- z							
# XF.G	1030		000.0								
5,500	1130		000.0								
4 . 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1740	ru	007.8								
2,500	2280.		5,000								
1,500	3200		000								
400	2 C C C C C C C C C C C C C C C C C C C		11.800								
005	. O. S.		13,900								
e in	6480		16.400								
e c	7540		200								
	10000		28.00C								
0.50	12100.		34,500								
င့် င ့် လူ ဝင် လူ ဝ	21000.		50.100								
NO ADJUSTH	MENT OF	AVERAGE ANN	ANNUAL DAMAGE	S FOR	THIS DATA						
FLOOD DAMAGE		STATION	2030 PLAN	N N		•, -:					
4											
3 - 1 - 2 - 2 -		G		00.0							
1139		,	× 6	. 98							
1940		yn.	. 81	5,81							
2921		v r	60,	0.65							
4 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		- •	1 27	- 50							
10101			7.0	3.70							
		- -	05.	1.50							
60002				66							
	AVG ANN	PT .	3.5A	33,58							
FLOOD DAMA	. B B	FOR STATION &	2030 PL	PLAN 2							
	X I										
30.0	EE -			1 3 4 4							
1139	, N			80 60 80 80 80 80 80 80 80 80 80 80 80 80 80							
1940.	3.0		5.81	5.81							
292			400	2,73							
6699			25.0	6.54							
10101	•		3.70	3.70							
8 15177.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1.50								
20002	000		00								
	AVG ANN	DMG 3.	3,58	33,58							
	A CG ANN	RFT	00.	00.0							
	*	*****	*	****		***	**************************************	*	***		化化化化化化化化

4	
0	
-	
CUMPUTATION	
4	
_	
-	
~	
뜨	
<u>~</u>	
\sim	
u	
RUNOFF	
4	
⋾	
7	
=	
≂	
12	
•	
¥	
x	
⋖	
MAKEA	
308	
5	
=	

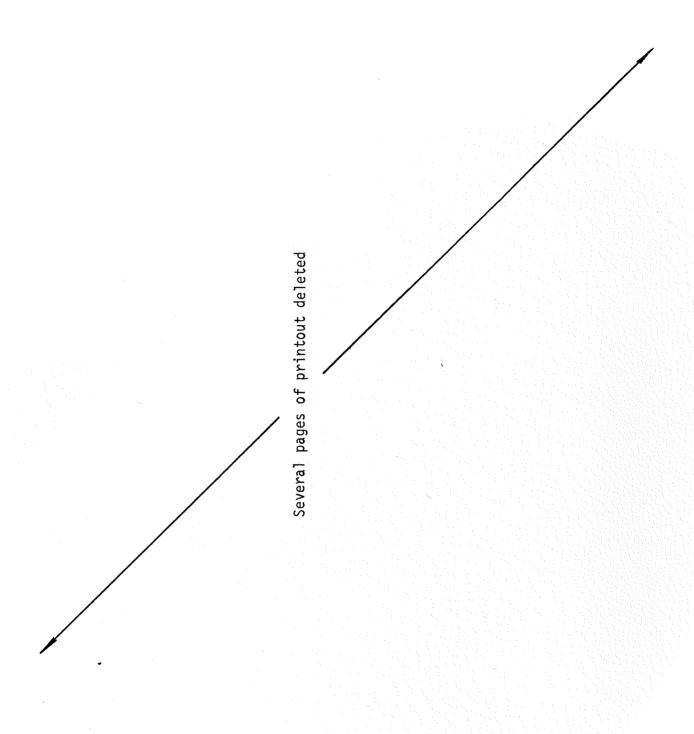
	250	200		ะกั																				
	160.	278.	. O.				AGE TAUTO																	
	31.	333.	φ. Θ. α	ก๋ณ๋					VOLUME	1147.	00°0°	43551.			VOLUME	1377	7 C C	4021			VOLUME 81034.	2295	39,79	6700.
FROM TAP	86.	383.	0 9	• • n • •	**		1881 0	RT10 1	TUTAL					RT10 2	TOTAL					R110 3	TOYAL			
XE AD	7.	23.	* 10	•••		S.H.	JPLT	PLAN 1	72-H0UR	6.	10.01	3351.		PLAN	72-HUUR	 	27 0° 5 C	4021			72-HUUR 1351.	. e.	39.79	6700.
1, KATIO		- M	83.	- M	**************************************	HYDROGRAP	T TAPE	_ 	24-HOUR		99,44	3508°		30	24-H0UR	- to 7	97,00	\$400			~	- (- ()	33,60	5658. 6980.
ž Ž		7		, m		COMBINE	REBAY POO IECON	≪ ∽	6-HUUR	9	2 2	1060.		< 1	6-H0UR	73.	7.57	1275			6*HUUR 4375.	154.	12,89	2171.
/100sr		7		•	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			0F 3	PEAK 10-0	63,				0F 3	PEAK	. 46.				• i 5	PEAK 4563.	129.		
					*		MBINED IN	SUK	Д. С.	S NO	NCHE S	AC-FT THOUS CU M		¥0°	i t		O E	THUIS CILE		t on	S H D	SEUCES	カモンとす	THOUS CU M
	TALL TOURS OF THE CONTRACT OF	FACATORSET GENERALIED TIPOLOGRAPHS FROM TAPE 2. 3. 4.4 TIU 1. 43. 64. 66. 70. 88. 108.	PLAN 1, KATIO 1 A 16. 31. 43. 24. 46. 70. 88. 100. 160. 413. 423. 383. 383. 276.	FACATOUSE, GENERAL CONTROL AND FRUM FAFE. 2. 3. 4. 4. 4. 10. 7. 68. 108. 160. 453. 453. 453. 453. 383. 276. 129. 80. 80. 80. 80. 80. 80. 80. 80. 80. 80	Fig. 100. 1. FAIL 1. 10. 31. 64. 65. 70. 453. 483. 483. 50. 33. 483. 64. 50. 39. 10. 10. 88. 70. 88. 50. 39. 50. 50. 50. 50. 50. 50. 50. 50. 50. 50	FACTORING PLAN 1, KATIO 1 7, 16, 31, 43, 65, 413, 450, 453, 460, 453, 460, 453, 460, 453, 460, 453, 460, 453, 460, 50, 453, 460, 463, 460, 50, 460, 50, 460, 50, 50, 50, 50, 50, 50, 50, 50, 50, 5	FACY LOUGHT FOR THE PLAN 1, KATIO 1 7. 16. 31. 43. 43. 64. 65. 45. 453. 423. 383. 108. 108. 109. 85. 423. 583. 59. 30. 413. 450. 453. 423. 583. 59. 30. 57. 64. 50. 59. 59. 30. 40. 55. 59. 59. 59. 59. 59. 59. 59. 59. 59	2. 3. 44. 10. 17. 10. 31. 43. 64. 65. 43. 443. 70. 10. 31. 443. 64. 65. 70. 453. 423. 383. 373. 279. 100. 100. 160. 160. 100. 453. 423. 383. 373. 279. 100. 100. 83. 64. 50. 59. 50. 59. 40. 50. 50. 50. 50. 50. 50. 50. 50. 50. 5	2. 3. PLAN 1.KATIU 1 7. 16. 31. 43. 160. 160. 160. 160. 160. 160. 160. 160	### PLAN 1, MATIO 1 7. 16. 31. 43. 64. 56. 70. 70. 160. 160. 413. 450. 453. 423. 383. 333. 278. 10. 453. 423. 383. 333. 278. 10. 64. 50. 50. 50. 40. 10. 8. 7. 64. 50. 50. 40. 10. 8. 7. 64. 50. 50. 50. 40. 10. 8. 7. 64. 50. 50. 50. 40. 10. 8. 7. 64. 50. 50. 50. 40. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10.	2. 3. PLAN 1, KATIU 1 7. 16. 31. 43. 64. 66. 70. 453. 423. 383. 100. 160. 10. 413. 450. 453. 423. 383. 133. 278. 10. 64. 50. 50. 50. 40. 10. 6. 5. 50. 50. 40. 10. 6. 5. 5. 5. 5. 5. 5. 5. 5. 5. 10. 6. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.	2. 3. PLAN 1.KATIU 1 7. 16. 31. 43. 64. 66. 70. 70. 70. 160. 160. 160. 160. 160. 160. 160. 16	TEVILOGEL GENERALED TRUTH INFER TRUTH INFE	SUM OF 3 HYDROGRAPHS STATE STATE	### 1900 1900	### PLAN I KATIU 1 7 16 16 16 16 16 16 16 16 16 16 16 16 16	### ##################################	######################################	### ##################################	**************************************	Sum of 3 Hydrographs 1000.	*************** ************** ******	### ##################################	STATES AND THE PARTY OF THE PAR



The color of the		PROPOSE	D PUMPI	PROPOSED PUMPING PLANT	SITE								
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0			305	-			0				IAUTO 0		
0. 400. 100000. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.		0°0 9FQ88	000°0 \$\$070	A V.G.	RO IRES	PLAN 1 UTING DAT		0. C E 0.	IOVR	LSTR			
0. 400. 1200. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.			NSTP8	NSTOL	LAG		× 000°0	TSK 0,000	STORA				
14. 14. 14. 15. 225. PLAN 1, RTIG 1 150. 1877 225. 262. 298. 335. 374. 421. 150. 180. 1200. 12			•	.000	00	0 0		••	00	• •	00		င်င
14. 14. 14. 15. 225. 262. 335. 335. 374. 421. 150. 120				STATI	N O	305, PLA	N 1 S RTI	1 0					•
140. 144. 144. 155. 17. 222. 33, 421. 150. 1200. 1220. 125. 140. 140. 120. 120. 122						OUTFLOW							
755, 127, 127, 1200, 120	* 3 * 3 * *	- 14.	77	3 €	 	15,	17	ر ر ر	33,	53,		61.	
1200, 1200,	597	7.55	* / O X	V 70		* C	# con	33.00	374	127		#26#	
1200	1200	1200	1200	1200		• • •	000	000	1000	000		1,200	
546. 437. 350. 280. 225. 181. 147. 119. STOR 50. 62. 75. 875. 877. 112. 125. 140. 245. 299. 112. 125. 140. 245. 299. 126. 125. 140. 245. 499. 126. 126. 165. 165. 165. 165. 867. 811. 1030. 1030. 1036. 1032. 1017. 867. 146. 117. 439. 356. 439. 400. CMS 1200. 1200. 1200. 670. 1139. 1139. INCHES 34. 14.14 14.14 15. 19.75 THOUS CU M 734. 2937. 4103. 4103.	1200	1200.	1200	1200	•	.00	000	1200	000	9000			
5. 5. 5. 11. 18. 245. 262. 75. 87. 99. 112. 125. 140. 245. 299. 359. 425. 499. 581. 665. 746. 939. 1011. 1030. 1032. 1017. 992. 939. 1011. 1030. 1032. 1017. 992. 867. 811. 749. 931. 72. 100. 650. 439. 356. 182. 146. 117. 93. 72. 49. 103. 1139. 1133.	685.	546.	437.	350		.089	. 525	181	147.	119		200	
5. 5. 5. 6. 7. 118. 18. 50. 62. 75. 87. 99. 112. 125. 140. 62. 75. 87. 99. 112. 125. 140. 625. 629. 359. 425. 499. 581. 665. 746. 939. 1011. 1030. 1036. 1032. 1017. 992. 867. 811. 749. 681. 749. 681. 749. 685. 439. 356. 439. 356. 449. 600. 1200.						STUR							
245. 62. 75. 87. 99. 112. 125. 140. 655. 939. 655. 939. 655. 939. 655. 939. 939. 939. 939. 939. 939. 939. 9	เก๋	ທ ີ່ 1	5.	ŝ		, ,	ç	7.	=	8		27	
CFS 1200, 1030, 1035, 1032, 1017, 992, 953, 665, 746, 1030, 1032, 1017, 992, 1017, 992, 1017, 992, 1017, 992, 1017, 992, 1017, 992, 1017, 992, 1017, 992, 1017, 992, 1025, 1017, 992, 1025, 1000, 117, 93, 1000, 1	× × ×	• •	29	75.		87.	* 00	112.	125	140		164.	
## 1036	· ·		6.0	359		52.	000	581.	665.	746.		821	
182, 117, 001, 75, 439, 356, 439, 400, 182, 117, 001, 75, 60, 40, 40, 40, 40, 40, 40, 40, 40, 40, 4		20.74		101	-	.050	1036.	1032	1017	992		958	
PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME 1200. 1200. 570. 190. 1139. 139. 1439. 14. 14. 14. 14. 178 19.75 3.54 14.14 14.14 19.75 19.75 5.54 2381. 3326. 3326. 4103.	228.	182	146.	117		93.	75.	, , , , , , , , , , , , , , , , , , ,	430°	356		38.5	
34, 34, 34, 19, 34, 34, 35, 35, 35, 35, 35, 35, 35, 35, 35, 35		į	•		HOUR	24-HOUR			VOLUME				
3.54 14,14 19,75 595. 2381, 3326, 734, 2937, 4103.		ž		3.00	34.	34.		•	1139.				
595, 2381, 3326, 734, 2937, 4103,		ž V	n -		3 T	. 56 . 44	<u>.</u>	20 H	7.0				
		THOUS CU N			595	2381	5386 410		3326				
				XAX	STOR MI	A CA	4504						



		66		30																								
		• • • • • • • • • • • • • • • • • • • •		• • •			40 0	000	0.0	0 00 0 00 0 00 0 00 0 00		°02	128.	521	900	• 56 • 6		•	• •	• •		•						
3 TR		• •		10000.			23.5	* 00° * 00°	1200	311.		***	108,	487	25.0	104		•	• <	• •	ō							
IDVR L	STORA -1.	••		00. 60.			20 C	1200	1200	339.		6	. 04	.001 .000	277.	113.		•	•	•	•	•	> *	1086.	74	18,83	3912	
Q O X	13K		ST PDSCNT	780			0.00	1200.	1200.	360		• '	83.	412.		123.		•	•	• •	• •	•	R TUTAL	•	• 4	m		
1081	×000°0	00	ANT DATA RCST PANCS1 10002300	00009	v 2, RTIO		10.	1110.	1200.	1019.		Š	73.	572.	400	134.		•0	•	• •	•		72-HUUR					
ROUTING DATA RES ISAME 1 0	AMSKK 0.000	00	PUMPING PLANT C PMPON PHRCST 1500, 100.	2300	305, FLAN	DUTFLOW		, or c	200	132.		STUR 5.	63.	528.	277	146.	PUMPING	•0	•		•••		Z4-HOUR	1151		13,56		
i i i	LAG	• • •	PMPMN PU	1000.	A110N		• •	້ຳ	0.						•			• 0	•	•	• •	•	6-HOUR	• 000 X	• • •	3,54	. 595 7.54	
S A V G	S NSTDL	1200.	УМРМХ 00000	50001	31			ec	27							74.				•	• •		PEA	1200.				
000°0 0°	NSTPS	1200.		250.					•	1200				nu .										Ω. α. α.	E LUZ	Σ	AC*F -	
0°0 88070				• • •				- 10 00 P	1200.	1200	•	ď	70.	194.	572	100		•0		oʻ.	• •	٥					0001	
		STORAGE		CAPACITY# CUST#				83.	1200.	1200.			n of:	3	₹ 6	1 0 1 0 1 N			•		• c	• •						



VPMP#1991223.

246. 246. 11196. 1200. 1200. 1200.								
			CUTFLOW					
	. 247.	£50°	. 652	200	338		654	•
			1200	1200	-	1,200	1500	-
-				1500		.0021	1200	
			_	1200		1200	1200	-
-	-	1200.	-	1200.	1200	1200	1200.	120
1200. 1200		1200.	1800	1200	7	1200.	1200.	
			51UR					
		85.	86.	• 176		153.	81.8	3(
399. 519.		20	1091.	1361,		1557.	6751	
	4299	.	7640.	9769.		14596.	17079.	61
ru	1.0		28435	29542	30432.	31129.	31052.	3201
		32277.	32129	31922.	31668.	31377.	31050	3071
30348, 29971		29185.	28779.	28365	27944.	27518.	27086.	565
			PUMPING	ING				
				• •	• 0	•	•0	
•0			• •	•		* 57709	* 55044	ò
			709	· 5044		* 7709	* 7709	ō
				* 7709		* 7709	. 6044	909
				. 4004		. 4409	. 4404	ç
6044. 6044.	. 6044.	6044.		• pp 0.9		6044.	* 7709	709
			6-HOUR 24#	24*HOUR 72	72-HUUR TOTAL	VOLUME		
		1200.						
	OX.				30.	1809.		
	INCHES		1.4		1.23	1,23		
	ΣΣ		3,54		51.37	31,37		
	AC-FT				5282	5282		
DOHL	THOUS CU M			2937,	6516.	6516.		
	E 7.				•			

II PR						9
AANCST 0.00000						
ADSCNT 0.00000						REGULATED FLOW/STOR
COMPUTATION IAGST 0						REGULA
DAMAGE DGPRT .050						2000
FL000 TRGT 000.						TOR = 500
EXPECTED ANNUAL NDMG ISAME 2 1 5	TYPE 2.10.00.10.50.00.00.00.00.00.00.00.00.00.00.00.00	202500 3900000 3900000 5540000 585000	↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	01 04 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	7	, <u>, , , , , , , , , , , , , , , , , , </u>
		c c		231,55 301,95 223,55 105,13 75,28	PLAN Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	879.04 .050 TARG
4 IO	*			232.61 232.61 110.98 110.21	00 00 00 00 00 00 00 00 00 00 00 00 00	M B
191	STATIO	24400000000000000000000000000000000000	0000 1507 1007 1507 1507 1507 1507		PRUB PRUB 1NT 0.000 1152 1150 1150 1150 013 0037 0013	AVG ANN BFT 915. EXCEEDENCE FREGUENCY
	DATA FUR STUR 1500. 2300. 4000.		1		AMAGES FOR EXCO BS - 7000 0 88 - 7000 0 88 - 7000 0 88 - 7000 0 88 - 7000 0 88 - 7000 0 88 - 7000 0 9	AVG ANN E
		00000000000000000000000000000000000000		15676 24937 38699 53876	PLOOD DAMA NO. STUR 2 898. 3 1628. 4 1672. 5 1775. 6 3071. 7 7774. 8 19064.	₹ ₩

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLANGRATIO ECONOMIC COMPUTATIONS FLOW IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	A R. E. A	2 4 1	RATIO 1	RATTO 2	RATIUS APPRATIUS APPRATIUS S	PLIED TO FI KATIO 4	LU#S RATIO S	KATIO 5 1.50	RATIO 7	A TION	RATIO 4
HYDROGRAPH AT		35,10	- ~	1343, 30,02)(1343, 38,02)(1611, 45,62)(1611, 45,52)(2685. 76.03)(2685. 76.03)C	3759. 106,44)(3759. 106,44)(5370, 152,06)(5370, 152,06)(8085, 8055, 8055, 228,09)	354,54) 31814, 31814,	17453 494.20) 17453 694.20)	659.07) 659.07)
ACUTED TO		35.10 90.91)	_ ~ ~ ~	1343. 38,02)(588,	1611. 45.62)(663. 18.78)(76.03) 76.03) 86.03)	3759. 106,443(1086. 30,743(5370. 152.06)(1329. 37,63)(8055, 228,09)(1522, 45,93)(11814. 334.54)(5264. 149.06)(17453. 94.20) 11126.	N G N G
ROUTED TO	70 T	35.10 90.91)	_ ~ ~ ~	941. 26.65)(526. 14.90)(1139. 12,74). 15,84).	1940. 54,94)(847. 83,99)(2921. 82,713(1008. 28,54)(#312, 122,10)(1257, 35,58)(6699, 189,70)(1548, 43,83)(288.58) 4177.	5177	2060 583.4 1450
HYDHOGRAPH AT	ů N	35.10 90.91)	- ~	1343. 38.02)(1343. 38.02)(1611. 45,62)(1611. 45,62)(2665. 76,03)(2685. 76,03)(3759. 106,44)(3759. 106,44)(5370. 152,06)(5370. 152,06)(8055, 228.09)(8055, 228.09)	334.54) 11014. 334.54)	17453, 494,2010 17453, 494,2010	
ROUTED TO	2030	35.10 90.91)	- ~	941. 26.85)(26.65)(1139. 32,24)(1139. 32,24)(1940. 54.94)(1940. 54.94)(2921. 82,71)(2921. 82,71)(4312. 122.10)(4312. 122.10)(189,703 (6699, 189,703 (288,58)(10191, 288,58)(15177	8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
HYBROGRAPH AT	ŝ	10.00	_ ~	453. 12.81)C 12.81)C	543, 15,38)(543, 15,38)(905. 25.63)(25.63)(1267, 35,88)(35,88)(1810. 51.25)(51.25)	2715. 76.86)(2715. 76.86)(4843	5883. 166.57)(5883.	7.00
3 COMBINED) 0 E	80.20 207.72)	- ~	2219. 62.84)(1664. 47.12)(2676. 75.79)(1968. 55.74)(129.21) (3201. 90.64) (6859. 194.23)(4613. 130.61)(10154, 287,53) (6620, 187,46) (15693. 444.39); 9953. 281.84)(672,473 147,473 147,683 418,193	35345 1300-86) 705-05)	1359,533 37599,
ROUTED TO	305	80,20 207,72)	- ~ .		1200. 53.98)(1200. 53.98)(1200, 33,98)(1200, 33,98)(33,98) 33,98) 33,98)		1200. 33.983(1200. 33.983(1200. 33.98)(1200. 33.98)(1200; 13,96)(33,96)(1200. 33.98) 33.98)
			- ~	1036. 278.)(608.	1835 1835 1985 1985	3587 4424.)(1628. 2008.)(7263.16 1672. 2062.16	11784.)(1775. 2189.)(15876. 19583.)(3021. 3727.)(24937. 30760.)(7774. 9589.)(38699. 47734.)(19064. 25515.)(53876. 66455.1 32355.

4 1 VAR 2 VAR	SYST!	Σ	OPTIMIZATION RESULTS VAR 5 VAR 6 0. 0.	RESULTS VAR 6 0,	010 7	DIV 8	PMP 9 PMP 10
	SYSTE (UNITS SAME	SYSTEM COST AND SAME AS INPUT *	M COST AND PERFORMANCE SUMMARY AS INPUT - NORMALLY 1000'S UF DOLLARS)	PERFURMANCE SUMMARY NORMALLY 1000'S UF	ARY UF DOLLAR		
DTAL SYSTEM CAPITAL COST	*	*	*	*	9889.		
TAL SYSTEM AMORTIZED	AMBRIZED CAPITAL COST	*	* * *		*867		
TAL SYSTEM ANNUAL D.	ANNUAL U.M. POWER AND REPLACEMENT	D REPLACE	MENT COST		323.		
OTAL SYSTEM ANNUAL CO	COST * * *	*	* * *	#** *		821.	
FRAGE ANNUAL DAMAGES	S EXISTI	EXISTING CUNDITIONS	TIONS * *		1117.		
VERAGE ANNUAL DAMAGES OPTIMIZED	S OPTIMI	ZED SYSTEM	* *		233.		
VERAGE ANNUAL DAMAGE	REDUCTION (BENEFITS)	(BENEFIT	* * * (8	*		944.	
APAGE ANNUAL SAGIES NET	NET DENET I	* *	*			143.	
DPTIMIZATION OBJECTIVE - MAXIMIZE	E . MAXIMI	ZE SYSTE	SYSTEM NET BENEFITS FOR TARGET PROTECTION LEVEL	FITS FOR	TARGET PR	OTECTION	*****
TFC81 AN	ANFCST 402.	ANCHPR 283.	TANCST 685.	ANDGBS 1177.	ANDMG 334.	TBNFTS 845.	NTBNFT 150.

EXHIBIT 5

SIZING RESERVOIR, PUMPING PLANT AND DIVERSION
(Unconstrained)

						0				LEGEND		N = NEW INPUT DATA	R = REVISED INDIT	J- Dryrers	O C. KEVISEU INPUI																						
					Š	300	27.5	~	i is						3000	2	720						•	A48				\$		=			65	300	272	280	7
	3.	0		-	. S.	1920	~	0 <	, W						21000	110	0000		0				G.	56.20	i i	٠		o• #		? • •		-	5.5	1920	3330	365	67
	3,25				375	1290	266	2 K	<u>ک</u>					7050	15500	1090	5550						~	4800	3	'n		3,5		٠ <u>٠</u>			175	20	3980	0,47	53
	ର ଜ ଅନ୍ତ ଅ	2	-		190	1040	4600	n o	2					0.23	11500	•	4950			6300	24000		•	4220		3		o. N	1.5	٠, و			0	20	0	909	10
	1.50				S	0 6	2100 775		8	N		٠	•		0	1060	1	ACH		80	10250		₩.	000	21000	۲.	0	å	•	•	5		85	910	5100	775	99
	1.00				50	9 6	2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		30			٥ ،	>	'n	6800	1045	3600	ION RE	-		6100		in o	2002	15100	٢	5 .	S		`.) • ·		20	840	5370	566	77
	0.70		25 E 25 E	•	33	000) is	33			•		975.0	5200	1030	3000	MODIFICAT	100	076	2050	-	9. g	1740	12100	v.	1.2			n c	•		33	900	5360	1250	95
2	0.50		=	35.1	2	760	0251	120	5	0	COLAVOIR			200	0007	1015	2400	CHANNEL		-	1020	•		1380	10000		1.0	•		- 0		35.1	N	2	5080	1540	120
	0.30		2 <u>1</u>		72	710	0000	160	€.	0	200			٥	C	1000	1500	930 TIAL		ŝ	500	9	v	. ~	8540	•	٠.		•	· ·			54	~	0097	1840	160
) (4)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		POTEN	•	70	0000	000	215	40	0	2		_	25000	0	596	•	POTEN		. 0	- 1	1050	۰ د د	1030	7340	0	•			, r		7	7.2	099	3950	500	215

										<u>LEGEND</u>	N = NEW INPUT DATA	R = REVISED INPUT DATA																	News.
							.35		6480	16.4				1000	006	: C	•										76000	11250	583
		20000	>0 * 0	•			'n		02 9 \$	13.9			() - 	110	⊋ -	<u>.</u>					•					50000	10650	0.7C
•		15000)) (000	8.			•	4 N	1330	 	•								10000	8670	37000	0000	390
	7	10000) —)		6300	24000	٠.		0 W	Ø.			7.7	7 OS	1530	30) <u>-</u>		-		7	•	•		8000	7860	28000	7050	300
		7500	医阴道氏征		3080	10250		500.	21000	7.2	20 ° 1		å	302	1690	200	0		N					8080	0009	0009	20000	5850	\$0 5 °2
0		50504 50004	ASS RFAC		2135	610 0	S. 51	20°C	15100	2.0	~ . • .	Ę		280	1810	25.5	=	POOL	la.	•		•		100	1000	2300	12500	3150	501
-		3750	LEVEE AND/OR BYPASS REACH		940	2020	· 5.	1.05	15100	3 N	54.5	FUREBAY PUR			1800		.	TO FOREBAY POOL	PLANT SITE					001	1000	1909	7000	1125	26.3
		2500 2500 2600	LEVEE A		S + 7	0201 •	· 5.	0 4 5	10000	9.	3	.OW TO FC	0 69 0 1	255	1650 2.0	; 5	I	NFLOW TO	PUMPING P		100000		100000	1200 1500	200	0001	4000	7.5	ç
	2000	1250	2030 OTENTIAL		20	200 19	5°S	 	6540	° .	30	OCAL INFI	•	230	1540	5.0	<u>~</u> ⊊	COMBINED INFLOW	PROPOSED P		1200		007	1500 1	250	20	2300	17°	0 • •
		2000		-		2030	• ;	200	7340	٥, د		•	- ·	220	730	72	<u>~</u> ~	, ປ _ີ .	- =		•••	-	••	0000	00	302	1500	00) D O

FLOOD CONTROL SYSTEM COMPONENT OPTIMIZATION	T AND DIVERSION
TEM COMPONENT	PUMPING PLAN
FLOOD CONTROL SYS	SIZING RESERVOIR, UNCONSTRAINED

		# 1000 ° 0 ° 0 ° 0 ° 0 ° 0 ° 0 ° 0 ° 0 °		V TANCST ANDMG D FTN(NC) 0 432,840 631,578 ,106E+04	V TANCST ANDMG O FTN(NC) 0 431,170 634,120 ,1076+04	V TANCST ANDMG G FIN(NC) 0 429,500 636,695 ,107E+04
z o	0 7 7	9 \1Q		083 DEV	08J DEV	083 DEV
IPLT IPRT NGTAN 0 3	3,25 4,40	- 005 - 005		VARCM1)	VAR(M1)	VAR(M1)
THRC IPLT	ERFURMED OH 1 1.50 2.20		PUT FAN 0,0000	VAR(M)	VAR(H)	VAR(M)
SPECIFICATION IHR IMIN METRO O O O O O O O O O O O O O O O O O O O	MULTI-PLAN ANALYSES TO BE PERFURMED NPLAN 2 NRTIOM 9 LRTIOM 1 .50 .50 .70 1.00 1.50 2.	SYSTEM OPTIMIZATION VAR 5 0. 0.	FIXED COST INPUT	NC 1 1 1 1 1 1	NO.	NO N
JOB SI	TI-PLAN ANAL NPLANE 2 P	VAR 4	# 400			
Z T	MUL.	VAR 3				
00	RTIUSE	VAR 2				
		¥				

.1066E+04

*1065E+04

.1064E+04

OBJECTIVE FUNCTION FOR VARIABLE 1

VAR 1 ADJ FRUM 4000.00 TO	5055,27	Z →	Σ. Σ.	VAR(M) 500E+03	VARCH1)	08J DEV 0.000	TANCST 469,391	ANDMG 582,004	0 FTN(NC) .105E+04
		SN	7 M	VAR(M)	VAR(M1)	OBJ DEV	TANCST 469,027	ANDMG (582,496	. FTN(NC) .
		S	Ξ ~	VARCH)	VAR(M1)	08J DEV	TANCST 468.664	ANDMG (. 10SE+04
OBJECTIVE FUNCTION FOR VARIABLE 7	.1051E+04	.1052E+0	9.4	,1052E+04				energy	• ·
VAR 7 ADJ FROM 500.00 TO	750.00	2-	E O	. 100E+04	VAR(M1)	083 DEV	TANCST 487,619	ANDMG (558,766	O FIN(NC)
		S.W.	E O	VAR(M)	VAR(M1)	083 DEV	TANCST 486.738	ANDMG 6	* TINCES
		UM Z	E O	VAR(M) .980E+03	VAR(M1)	08J DEV	1ANCS7	ANDMG C	0 FTN(NC)
OBJECTIVE FUNCTION FOR VARIABLE 9	.1046E+04	.1047E+0	4	.1047E+04					
VAR 9 ADJ FRUM 1000.00 TO	1500,00	2	E -	VAR(M) .506E+04	VAR(M1) .150E+04	00000	TANCST 513,309	ANDMG C 505.468	0 FTN(NC)
		S W	E 4	VAR(M) .500E+04	VAR(M1)	083 DEV	TANCST 511.556	ANDMG 0 507,597	. 1026+04
		S.W	M 4	VAR(M)	VAR(M1)	083 DEV 0.000	TANCST 509,803	ANDHG 0 509,724	O FINCNC)
OBJECTIVE FUNCTION FOR VARIABLE 1	.1019E+04	.1019E+0	, 2	.1020E+04					
VAR 1 ADJ FRUM 5055,27 TO	7582.91	ON THE	Σ Γ	VAR(M) .750E+03	VAR(M1) .758E+04	087 DEV	TANCST S77.444	ANDMG 0	0 FIN(NC)
		2 N	Σ×	VAR(M)	VAR (M1)	087 080	TANCST 576.896	ANDMG U	. 101E+04
		UMZ	E L	VAR(M) .735E+03	VAR(M1) .758E+04	08J DEV 0.000	TANCST 576,349	ANDMG O	. 101E+04
OBJECTIVE FUNCTION FOR VARIABLE 7	.1005E+04	.1005E+04	7	.1005E+04					

			9 1	E O	VARCM)	VAR(M1)	000 ° 0	TANCST 604.961	ANDMG O FTN(NC) 400,764 .101E+06	C 2
VAR 7 ADJ FROM	750,00 10	862,50	2-	E O	VAR(M)	VAR(M1) .863E+03	08J DEV	TANCST 585,680	ANDMG O FINCNC) 418,435 ,100E+04	. a
			O.N.	Σ Φ	VAR(M)	VAR(M1) .863E+03	083 050	1ANCST 584.910	ANDMG O FTN(NC) 419,866 ,100E+04	. .
			SW Z	E 0	VAR(M)	VAR(M1) .863E+03	08J DEV 0.000	TANCST 584,139	ANDMG O FIN(NC)	0.2
DBJECTIVE FUNCTION FOR VARIABLE	VARIABLE 9	.1004E+04	*1005E+04		.1005E+04					
VAR 9 ADJ FRUM	1500,00 10	2250,00	ů. T	Σ σ Σ	VAR(M) .758E+04	VAR(M1) .225E+04	08J DEV	TANCST 628.344	ANDMG O FIN(NC) 357,691 .986E+03	O M
			2N	Σ 7 Σ 6	VAR(M)	VAR(M1) .225E+04	083 DEV	TANCST 626,570	ANDMG O FIN(NC) 359,038 ,986E+01	- m
			S M	Σ°	VAR(M)	VAR(M1)	08J DEV	TANCST 624,795	ANDMG 0 FIN(NC) 360,389 ,985E+03	
OBJECTIVE FUNCTION FOR VARIABLE	VARTABLE 1	.9860E+03	-9856E+03		*9852E+03					
			O-	E M	VAR(M)	VAR(M1)	08J DEV	TANCST S64,209	432,969 .997E+03	
VAR 1 ADJ FROM	7582,91 10	6824,62	Ow Z	## ## ## ## ## ## ## ## ## ## ## ## ##	VARCM3 *863E+03	VAR(M1) •682E+04	083 DEV 0,000	TANCST 610.603	ANDMG O FTN(NC) 371,331 ,982E+03	
			UN Z	E	VAR(M)	VAR(M1)	08J DEV	TANCST 609,970	ANDMG O FIN(NC) 371.968 .982E+03	
			O M	E M	VAR(M)	VAR(M1) .682E+04	08J DEV	TANCST 609,337	ANDMG O FTN(NC) 372,543 ,982E+03	
OBJECTIVE FUNCTION FOR VARIABLE	VARIABLE 7	.98196+03	.9819E+03		.9819E+03					
			U m	Z Z Z D	VARCM)	VAR(M1)	083 DEV	TANCST 641.426	ANDMG O FIN(NC) 346,294 ,988E+03	
			U = Z	E O	VAR(M)	VAR(M1) - 992E+03	08J DEV	TANCST 620,095	ANDMG O FIN(NC) 364,329 ,984E+03	
			U =	E O	VAR(M)	VAR(M1)	08J DEV	TANCST 613,450	ANDMG O FTN(NC) 369.048 ,982E+03	
			S.	EO	VAR(M)	VAR(M1) .863E+03	08J 0EV	TANCST 610.603	371.331 .982E+03	
			UN Z	E O	VAR(M)	VAR(M1) 863E+03	08J DEV	TANCST 609.075	ANDMG O FTN(NC) 372,993 .982E+03	
			UM 2	Σ Q	VAR(M) .221E+04	VAR(M1)	083 DEV	TANCST 607.547	ANDMG OF TN(NC) 374,569 ,982E+03	
OBJECTIVE FUNCTION FOR VARIABLE	VARIABLE 9	.98198+03	.9821E+03		.9821E+03					

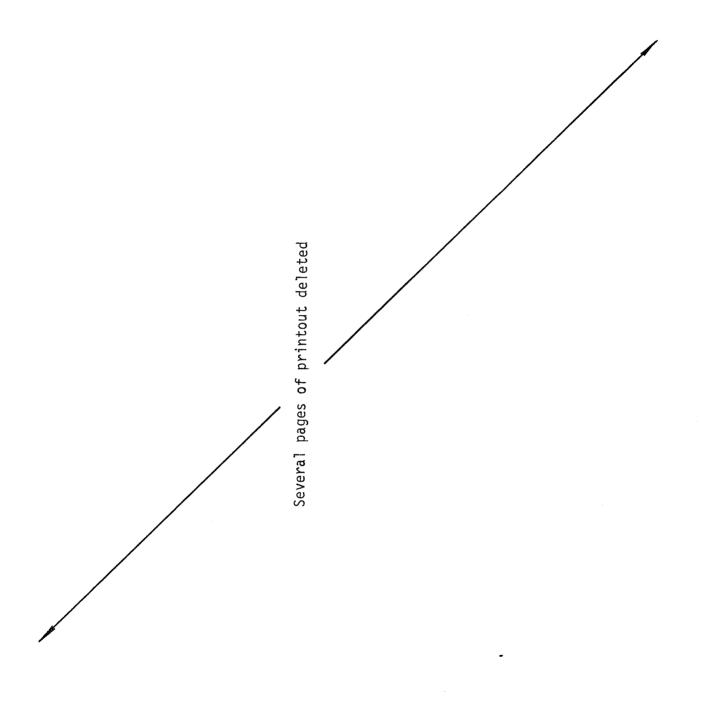
		D H	Σ 1	VAR(M)	VAR(M1) 358E+04	08J DEV	1ANCST	ANDMG D FIN(NC) 307,995 ,995E+03
		Ž.	Σ of Σ	VARCH)	VAR(M1) .259E+04	08J DEV	TANCST 633,517	ANDMG O FTN(NC) 350.327 .984E+03
		2	I H	VAR(H)	VAR(M1)	08J DEV 0.000	TANCST 617,477	364,816 .982E+03
		U F	E o	VAR(M)	VAR(M1)	083 DEV 0,000	TANCST 610.603	371.331 .982E+03
		S W	E	VAR(M) .676E+04	VAR(M1)	08J DEV	TANCST 608.900	372.610 .982E+03
		S W	Σ ··	VAR(H)	VAR(H1)	087 050	TANCST 607.137	ANDMG G FIN(NC) 373,910 ,981E+03
DBJECTIVE FUNCTION FOR VARIABLE 1 . 98	819E+03	9815E+0	M	.9810E+03				
		Ž →	Σ -	VAR(M) .863E+03	VAR(M1) 4556+04	063 067	TANCST 546,666	ANDMG O FTN(NC) 454,123 .100E+04
		Z O →	Σ Γ	VAR(M) .863E+03	VARCM13	083 DEV 0.000	TANCST 593,204	ANDMG O FIN(NC) 390,554 ,9846+03
VAR 1 ADJ FRUM 6824.62 TO 6	6619,88	Z O	Σ ~	VAR(M) .863E+03	VAR(M1)	083 080	TANCST 605,380	ANDMG OFTN(NC) 375,403 .981E+03
		S W	Σ ħ	VAR(H) .854E+03	VAR(M1)	083 DEV	TANCO1	ANDHG Q FTN(NC) 376,040 ,981E+03
		S W	Σ ~	VAR(M) .845E+03	VAR(M1)	08J DEV	TANCST 604,114	376.619 .981E+03
OBJECTIVE FUNCTION FOR VARIABLE 7 ,96	9808E+03	.9808E+0	M	.9807E+03				
		U →	Σ Φ	VAR(M)	VAR(M1)	08J DEV	TANCST 636,203	350,384 ,987E+03
		Z →	E O	VAR(M)	VAR(M1)	08J DEV	TANCST 614.872	ANDMG O FIN(NC)
		2 →	E O	VAR(M)	VAR(M1)	08J DEV	1 ANCST	ANDMG O FIN(NC) 373,110 ,981E+03
		U # 2	E O	VAR(M)	VAR(M1)	085 DEV	TANCST 605,380	ANDMG O FIN(NC) 375,403 .981E+03
		U N Z	Ε O	VAR(M)	VAR(M1)	08J DEV	TANCST 603,852	ANDMG O FININC) 377.068 .981E+03
		S W	E O	VAR(M) .221E+04	VAR(M1)	08J DEV	TANCST 602,325	378,649 .981E+03
OBJECTIVE FUNCTION FOR VARIABLE 9 . 98	.9808E+03	.9809E+03	×	*9810E+03				

ANDMG O FIN(NC) 312,015 _ 9946+03	354,389 983E+03	368,885 .981E+03	ANDMG OFTN(NC) 375,403 981E+03	377,823 ,981E+03	379,187 ,981E+03		374,796 981E+03	. O	ANDHG D FTN(NC) 375,348 .981E+03							
TANCST 681,762	TANCST 628.294	TANCST 612,254	TANCST 605,380	TANCST 603,688	TANCST 601,999		TANCST 606,020	TANCST 605,572	TANCST 605.438	***		IAUTO 0		# C 37 F	000	5 - 0 > - 0
084 DEV 0,000	08J DEV	083 DEV	08J DEV	08J DEV 0,000	08J CEV 0.000		OBJ DEV 0,000	083 DEV	083 DEV	在門外外在在在衛門在衛		ISTAGE IA				12.
VAR(M1)	VAR(M1)	VAR(N1)	VAR(M1)	VAR(M1)	VAR(M1)		VAR(M1)	VAR(M1)	VAR(M1)	***		INAME	TAPE		ią.	M.L.
VAR(M)	VAR(M)	VAR(M)	VAR(M) . 602E+04	VAR(M)	VAR(M)	.9812E+03	VAR(M) .863E+03	VAR(M)	VAR(M) .863E+03	***	NOIL	JPLT JPRT	READ FROM TAPE		39	
 Σ	E TO	E =	E ++	E of		103	E N	7 A 1	¥ ~	* *	COMPUTATION		HYDROGRAPHS	228	1275	17.
2	Ž.	2-	∑ ~	ON Z	2.7	0+36086+	2	2	2	***	RUNUFF	UW IECON ITAPE 0 2			243 249	0- & •
						.9808E+03				* *	SUB-AREA	RESERVOIR INFLOW STAG ICOMP IEC 10 0	PREVIOUSLY GENERATED	8. 2005	313.	4 8 8
						6.				***		A H	PREVI	1001	385	30.
						R VARIABLE				**		PUTENTI		178.	460.	10.
						UNCTION FO				***					550	10.
						UBJECTIVE FUNCTION FOR VARIABLE										

					1120.	30000° 69566°		* * * * * * * * * * * * * * * * * * *	7443. 876. 1186. 1186. 776.	
***		IAUTO 0			21000* 1105* 6000*	24648 . 54095		27. 39 72. 219 81. 587 66. 239 92. 83	734. 76. 390. 140. 220. 118. 97. 118. 77. 77. 77. 77. 77. 77. 77. 77. 77. 7	
* *		10 H C C C C C C C C C C C C C C C C C C	# 0 %	0 00 0	15500. 1090. 5550.	18388. 42512.		→ D is N		m • • • • • •
***		I NAME 1 I DVR	STORA 0 0 10RA	T ELEVT	11500. 1075. 4950.			117 145 568 518 109 109		1AL VOLUME 16724 • 474 • 74 18 76 1383 • 1706 •
***		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	18K 0,000	17 COUT	000° 060° 350°	FLOW FUNCTION 0590, 5376, 28966	101	1888 1888 1888 1888 1888 1888 1888 188	722. 808. 1319. 7958.	*HUUR TUT 279* 8* 74 18*76 1383* 1706*
**	ROUTING	C CPLT OPLT O O O O O O	ATA ICPT 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DATA RDSCNT	00°*	5	PLAN Z, RT	**************************************	720 1263 1317 1917 8085	11008 110° 110° 110° 110° 110° 110° 110°
*****	HYDROGRAPH R	CON ITAPE 0 0 PLAN 1 ROUTING DAT	PLAN Z FES ISAME 1 SAME 1 O O O O O O O O	SERVOIR RANC	% * 6 8	620. ETIC STORAGE 6620. 1653.	110, P	101. 494. 560.	\$708 719. 789. 1197. 1344. 1016. 818.	2
	HYD	H	AVG IRE 0.00 STDL L	CC08 100,00	5200 1030 3000	OF 6620 SYNTHETI 3843.	STATION	150 150 150 150 150 150 150 150 150 150	719. 780. 1126. 1049.	588. 168. 16. 38. 415. 56. 66. 66.
***		SERVOI	LCSS A .000 0.9	VL EXPL	1015. 2400.	STURAGE 1934. 827.	<i>o</i> ,	77. 77. 529. 579. 174.	00000000000000000000000000000000000000	9 W + 8 W +
*		PROPOSED RE 181 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	• 0 0 • 0 • 0 • 0 • 0 • 0 • 0 • 0 • 0 •	COGL ELEVI.	2500. 1000. 1500.	1019. 1019.				OCAS INCHES ACAMAN
***				CAPMN CE 0. 200	965.	90 91 91 91 91 91 91 91 91 91 91 91 91 91		25 E E E E E E E E E E E E E E E E E E E	719 761 988 1400 1117	
**				CAPHX CA	CAPACITY = ELEVATIONS COSTS	ET CREST ELEVATION STORAGE= 7.		7.7.2.2.2.2.2.3.3.3.3.3.3.3.3.3.3.3.3.3.	719. 752. 1207. 1106.	

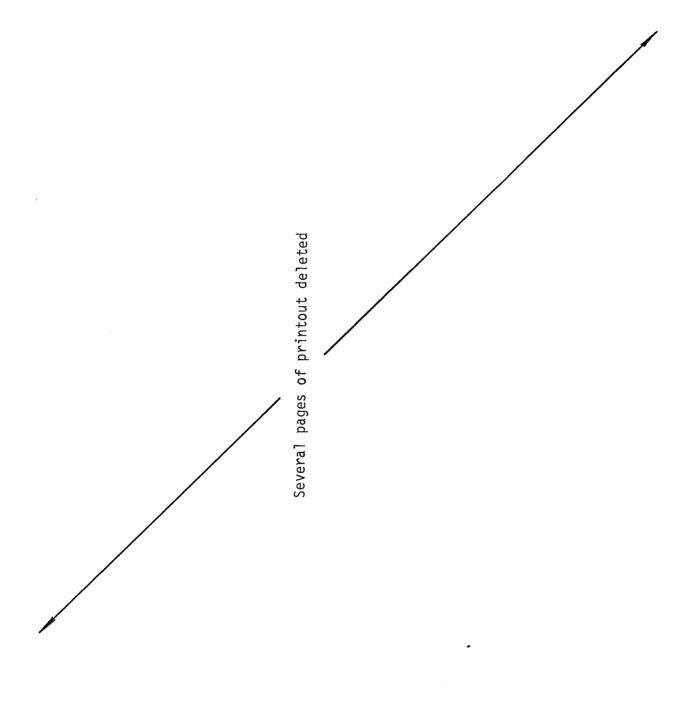
OUTLET CREST

MAXIMUM STORAGE #



			STATION	110, PL	PLAN Z, RTIO	a		-	
10051. 10051. 10051.	15 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	78 16-13 16-64 16-66 14-66	80. 702. 4763. 7580. 1631.	0UTFLOW 86. 774. 7931. 6598. 1614.	100001 100001 10001 10001	1374 1374 150911 150811 15080	220. 12179. 1045. 1396.	11 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
1217 4177 9273 6805 5671	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	772 772 6581 6581 6529 6529	773. 7520. 8330. 6469. 5332.	\$708 1818 8436 8050 6358	788. 1987. 9093. 7781. 6245.	815* 2177* 9495* 7534* 6130	400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	27672 9664 7116 5901 4781	20000000000000000000000000000000000000
	4 7 00 00 00 00 00 00 00 00 00 00 00 00 0	O O O O O O O O O O O O O O O O O O O	11340U 11340U 352 756.00 56448 XIMUM 8	24mH0U 6097 173 164.1 12099 14924	72-940U 22-940U 201-1-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9	701AL	7 VOLUME 7 7 7 2 2 3 7 4 9 2 2 1 2 8 2 3 3 4 8 2 3 4 8 3 4 8 3 4 8 3 4 8 3 4 8 3 4 8 8 3 4 8 8 3 4 8 8 8 3 4 8 8 8 8		
			STATION RESERVOIR 6619.	110, PL	2, RTIO	o .			
106. 580. 1492. 3137.	106. 2686. 13430. 1552.	106. 772. 7339. 11931. 2074. 1505.	109 847 11245 10483 1673	0UTFLOW 116. 896. 14335. 19098. 1938.	136 9449 6610 17797 1622 1456	74 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1899 1898 1898 1889 1489	434 17597 4620 1872	1321 1321 1321 13321 13531
792. 1409. 5537. 70465. 5651.	16062 10062 10087 10087	793. 98613. 97595. 67442.	0.000 0.000 0.000 0.000 0.000 0.000 0.000	800 800 2256 10289 10774 6520	00 00 00 00 00 00 00 00 00 00 00 00 00	851. 11252. 6055. 5186.	934. 3109. 11322. 7746. 6189.	1065 3599 11173 7478 6077	1227 4390 10867 7247 5964
	THOUS A	OC CC C	PEAK 6"HUU 8164, 16940 514, 480 114,0 114,0	24°HUUR 262° 9 248°69 3 248°69 18329° 22608°	72-HGUR 128- 11-36- 21265- 21265- 26230-	TOTAL	25 VOLLUME 17242. 11.32. 288.53. 21265.		
			MAXIMUM ST	STORAGE =	11322.				

****	* * *	***	***	*	***	¥	***	*	********	
				HYDROGE	HYDROGRAPH ROUTING	NG				
	POTENTI	AL CHANT ISTAG 1030	POTENTIAL CHANNEL MODIFICATION REACH ISTAG ICOMP IECON ITAPE 1030 1 1 0	ICATION IECON	REACH ITAPE 0	JPL.T	JPRT INAME 0	E ISTAGE	IAUTO	
	0°0 \$\$U 7 0	000°0 \$3073	AVG 0 * 00	ALL PLAN ROUT IPES	ALL PLANS HAVE SAME ROUTING DATA IRES ISAME I	⊢ 0	O O O O O	8.0 8.0		
		18178	NSTDL	LAG		0 000*0	TSK STORA 0,000			
KAGEH FLOZH	0. 50°.		475. 1020.	2050.	6100.	10250	6300.	00	••	
	1		STATION		1030, PLAN 1, RTIO	1, RTIO 1				
	0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		PEAK 6	6**HOUR 907* 26*	24-HOUR 613.	72-HUUR 289.	TOTAL VOLUME 17369.	15 UME 492.		p
	EX DO SOUTH	ウェース		• • • • • • • • • • • • • • • • • • •	11100	19.49	554	19.49 1436.		
			MAXIX	MAXIMUM STORAGE	10E	434.				
			STATION		1030, PLAN 1, RTID 2	1, RTIO 2				
	DA DACHES AACHTA		PE 41 11 11 11 11 11 11 11 11 11 11 11 11	1091. 31. 7.34 7.34 668.	24 HUUR 733 - 733 - 145 - 73 145 - 73 1794 -	72*HUUR 347* 10* 172* 492 1723*	TOTAL VOLUME 20842. 590. 23.38 1723.	20042. 2042. 590. 23.38 2723. 2126.		
			MAXI	MAXIMUM STORAGE	i GE	\$20				



ILPR 0

	70 20 34 00 50 50	000	000	500	. 700	000	.300	000	000	000	000	000%			, 1	00.0		89°	5.12	4.39	0 1 C	40	21,97		10 20 20 20 20 20 20 20 20 20 20 20 20 20	. 0		00.0	00.00	80		.36	3,33	18.63
	Ξ`			. ۳.	- 2	۰,۰		=:	1	5	~ ?	Ž 8	DATA			ر د د	30	ار در در	2 60 2 73	14	20 c 20 c	200	20			00	00	000	0 6	28	27 C	, 6 1 0 7	2.0	89 19
	ع تعا	•	500	S	u c	າ ເຄ	0	~ a	9	0	٠,	5 ~	PR THIS		1 1 2 2	-							10.		a	. 0	٥	٠	•	•				x 0
PLAN 1	ين د	000	100 200	300	300	7 c00	600	700	300	000	200	300 300	MAGES F	PLAN 1	- 5		.07	07.	* * ! w! * #2	12.	7 is	No.	1.59	PLAN 2		09.0	00.0	00.0	00.0	.08	• 07	 	₹,	1,35
0	<u>-</u>	ċ	•							-	<u>.</u>		<u>م</u>	0	Σ		œ	'E	, per	7	c c	,	Œ		22		0	 	⇒ N	ç	. .	- no	_	40
1.0	Ξ 5	0.0	C 0	0.0	0.0	000	00	00	0.0	0.0	0.0	000	ANNUA	Ü.	Ü	0	0	u e	7.7	ۍ . د د			. 52 . 53 . 54	~	v	0.0	0.0	0	٠ ٠	1.2		ຸ້	ທ	28.46
ATIO	en c	0	~.ળ ~ુવ	ິ້	^ °		· ·	200		0 m	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		RAGE.	110N	-موني		ń.	o n			C ~			gares .			•							
. 31	x	•			•		•	•					74 	. ±. €	Š ≥ a.,	30	57.		Œ.	* ·	ñ :e - c	0.	0 × 6	E	z Z	~~ ~~ •	1.75	77.	.786	.39	. 150	7 0	546	35 F F
ATA F											77	→ (& .		ିଲ ଓ ଜଣ୍ଡ ଓଡ଼ିଆ	T X C	000.4	1. ab 2.	1.769	. R67	M 10 00 00 00 00 00 00 00 00 00 00 00 00		900.	. ≪.	100 S		000.	462	~ 0 0 4 0 F					5 A N.E.	VG ANN
0.0	700	200	500	005	000	700	.500	250	150	100	000	003	ADJUSTRE	LOUD DAMAC			6 2	 	2	о С		93	Ā	DAMAG		•	4	· ·	-				> 4	Ą
	ATA FOR STATION 1030 PLAN 1	ATA FOR STATION 1030 PLAN 1 PFAK SOM TYPE 1 TYPE 2 1030. 0.000 0.000	ATA FOR STATION 1030 PLAN 1 PEAK SOM TYPE 1 TYPE 2 1030, 0.000 0.000 1130, 0.000 0.000	ATA FOR STATION 1030 PLAN 1 PFAK SUM TYPE 1 TYPE 2 1030, 0.000 0.000 0.000 1130, 0.000 0.000 1350, 1.660 .500	ATA FOR STATION 1030 PLAN 1 PEAK SIM TYPE 1 TYPE 2 1030 0.000 0.000 0.000 1130 0.000 0.000 0.000 150 1.600 .500 2280 5.000 330 1.500	ATA FOR STATION 1030 PLAN 1 TYPE 2 1030 0.000 0.000 0.000 1350. 0.000 0.000 0.000 1350. 1.500 2.400 2.400 2.500 1.500 2.	ATA FOR STATION 1030 PLAN 1 TYPE 2 1030 0.000 0.000 0.000 0.000 1350. 0.000 0.000 0.000 1350. 2.400 2.400 3.500 3.500 3.500 4220. 42600 3.500 3.500 3.500 3.500 3.500	ATA FOR STATION 1030 PLAN 1 TYPE 2 1000 0.000 0.000 0.000 0.000 1350. 1.560 0.200 0.500 1500 1500 1500 1500 1500 1500 1	ATA FOR STATION 1030 PLAN 1 TYPE 2 1030 0.000 0.000 0.000 0.000 1130. 1.500 1.500 2.400 2.400 2.500 2.500 4.700 4.700 2.500 2.	ATA FOR STATION 1030 PLAN 1 TYPE 2 1030 0.000 0.	# # # # # # # # # # # # # # # # # # #	# # # # # # # # # # # # # # # # # # #	ATA FOR STATION 1030 PLAN TYPE TYPE	ATA FOR STATION 1030 PLAN 1 TYPE 2 1030 0.000 0.	ATA FOR STATION 1030 PLAN 1 PEAK STATION 1030 PLAN 1 1150 0.000 0.000 0.000 1150 1.600 0.000 0.000 1250 1.600 1.000 1.500 1250 1.500 1.500 1.500 1250 1.500 1.500 1.500 1150 1.500 1.500 1.500 1150 1.500 1.500 1.500 11510 1.500 1.500 1.500 11510 1.500 1.500 1.500 11510 1.500 1.500 1.500 11510 1.500 1.500 1.500 11510 1.500 1.500 1.500 11510 1.500 1.500 1.500 11510 1.500 1.500 1.500 11510 1.500 1.500 1.500 11510 1.500 1.500 1.500	ATA FOR STATION 1030 PLAN 1 TYPE 2 1000 0.000 0.000 1500 1500 0.000 0.000 0.000 0.000 1500 15	ATA FOR STATION 1030 PLAN 1 TYPE 2 1000 0.	ATA FOR STATION 1030 PLAN 1 TYPE 2 1000 0.000 0.000 1500 1500 0.000 0.000 0.000 1500 15	ATA FOR STATION 1030 PLAN 1 TYPE 2 17PE 2 17PE 1 17PE 2 1500 150	ATA FOR STATION 1030 PLAN 1 TYPE 2 1000 0.	ATA FOR STATION 1030 PLAN 1 TYPE 2 150 150 150 150 150 150 150 150 150 150	ATA FOR STATION 1030 PLAN 1 TYPE 2 1150 1150 0.000 0.000 0.000 1150 1150 1	ATA FOR STATION 1030 PLAN 1 PEAK STATION 1030 PLAN 1 1568 0 0000 0000 0000 1350 1550 1550 1550 15	ATA FOR STATION 1030 PLAN 1 PEAK SIM TYPE 1 TYPE 2 1030. 0.000 0.000 0.000 1550. 1.600 1.000 1.500 1700. 2.400 2.400 2.900 1700. 2.400 2.900 2.900 1700. 2.400 2.900 1.500 17.00 2.400 2.900 1.500 17.00 2.400 2.900 1.500 17.00 2.400 1.200 1.500 17.00 2.4000 1.200 1.500 17.10 2.40.300 1.200 1.500 17.10 444.300 1.200 1.500 17.10 444.300 1.200 1.500 17.10 444.300 1.200 1.500 17.10 2.400 1.200 1.500 17.10 2.400 1.200 1.500 17.10 2.400 1.200 1.500 17.10 2.400 1.200 1.500 17.10 2.400 1.200 1.200 17.10 2.400 1.200 1.200 17.10 2.400 1.200 1.200 17.10 2.400 1.200 1.200 17.10 2.400 1.700 1.200 17.10 2.400 1.200 1.200 1.200 17.10 2.400 1.200 1.200 1.200 17.10 2.400 1.200 1.200 1.200 17.10 2.400 1.200 1.200 1.200 17.10 2.400 1.200 1.200 1.200 17.10 2.400 1.200 1.200 1.200 17.10 2.400 1.200 1.200 1.200 17.10 2.400 1.200 1.200 1.200 1.200 1.200 1.200	### FOR STATION 1030 PLAN 1 PFAK STATION 1030 PLAN 1 1030. 0.000 0.000 0.000 1350. 1.500 2240. 2.400 2240. 300 2240. 300 2250 2260 2260 2270	### FOR STATION 1030 PLAN 1 TYPE 2 179E 2 1500	### FOR STATION 1030 PLAN 1 PFAK SIM TYPE 1 TYPE 2 1150. 0.000 0.000 0.000 1150. 0.000 0.000 0.000 1250. 1.500 1.000 2.900 #### PAUL	### FOR STATION 1030 PLAN 1 PFAK SIM TYPE 1 TYPE 2 1150. 0.000 0.000 0.000 1350. 1.600 1.000 2.900 2200. 2200 2.000 2.900 ##################################	### FOR STATION 1030 PLAN 1 TYPE 2 1790 1150	### FOR STATION 1030 PLAN 1 PFAK SIM TYPE 1 TYPE 2 1150	### FOR STATION 1030 PLAN 1 PFAK SIM TYPE 1 TYPE 2 1150. 0.000 0.000 0.000 1350. 1.600 1.000 2.900 ### PAUL	### FOR STATION 1030 PLAN 1 PFAK SIM TYPE 1 TYPE 2 1150. 0.000 0.000 0.000 1350. 1.600 1.000 0.000 2200. 2200 2.000 2.900 ##################################	### FOR STATION 1030 PLAN 1 PFAK SIM TYPE 1 TYPE 2 1150. 0.000 0.000 0.000 1350. 1.600 1.000 0.000 2200. 2200 2.000 2.900 ##################################	### FOR STATION 1030 PLAN 1 PFAK SUM TYPE 1 TYPE 2 1150. 0.000 0.000 1250. 0.000 0.000 0.000 1250. 2.000 2.000 2.000 2200. 2.000 3.000 2.200 4220. 11.000 3.000 2.200 4220. 12.000 3.000 3.000 4220. 12.000 3.000 3.000 15100. 22.000 1.000 6.000 15100. 22.000 1.000 6.000 15100. 22.000 1.000 6.000 15100. 22.000 1.000 6.000 15100. 22.000 1.000 6.000 15100. 34.500 1.200 10.300 15100. 34.500 1.200 10.300 15100. 34.500 1.200 10.300 15100. 34.500 1.200 10.300 15100. 34.500 1.000 0.00 15100. 34.500 1.000 0.000 15100. 34.500 1.000 0.000 15100. 34.500 1.000 0.000 15100. 34.500 1.000 0.000 15100. 35.50 1.000 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.200 0.000 15100. 35.50 1.000 0.000 151000. 35.50 1.000 0.000 151000. 35.50 1.000 0.000 151000.

		The state of the s					•••		00		
	44.00 40.00 40.00 40.00										4644 456 6456
IAUTO		## ## ## ## ## ## ## ## ## ## ## ## ##	IAUTD				00		20000.		
	448 88864 80848	*		~ ~							448 4444 4444 4444 4444 4444 4444 4444
1STAGE 0			1STAGE 0	LSTR 0	LSTR		00		15000		
INAME	######################################		INAME	I DVR 0	1DVR	STORA -1.	• •		10000.		1000 10000 10000 74040
F 0	¥	· · · · · · · · · · · · · · · · · · ·	רע מי	ğ. ο	<u>a.</u> 0	X O		⊢ 0	100		4 N 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
JPRT	# 25 4 4 5 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5	**	JPRT	9 0 8 0	0 W d I	1SK 0,000	00	DDSCNT .05040	7500.	0.1.0	2 N 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1
UTATION JPLT	PH S S S S S S S S S S S S S S S S S S S	92	JPLT	IOPT	IOPT	× 000 • 0		ANCST 01500	5.5	2, RTIO	2002 2005 17.
F COMP	RATIC 1	***************************************	DIVERSION ITAPE	S D S D S D S D S D S D S D S D S D S D	AN 2 NG DATA ISAME	AMSKK O. DOO	• •	ON DATA	5000	PLAN	¥016
SUB-AREA RUNOFF COMPUTATION MP IECON ITAPE JPLT 0 0 0	GENERATED HY 6. 6. 13. 13. 13. 13. 13. 13. 13. 13	***************************************	SATE DIV	PLAN 1 ROUTING DATA IRES ISAME	PLAN ROUTING IRES ISA	LAGA	• •	DIVERSION DATA DVRNN THOVR DANCST 0. 1500, .01500	3750.	20,	MWW D⇔0404 D+0406 D+0408
# H	> Www. 0 4 H M B @ 0 0 W 4 @ M S	i.	COMO						m m	STATION	### ON ##
SUE ICOMP	PREVIOUSLY GE 70. 1340. 70. 1340. 70. 313. 30. 34.	* *	R TO ACCOMODATE ICOMP 1 0 0	A V G	A V G	NSTDL	00	DVRMX 20000.	2500.	STA	250 250 250 250 250 250
ISTAG 20	127 P R E V V V V V V V V V V V V V V V V V V	***	RESERVOIR ISTAG 20	000000	000.0000	NST PS					202 202 302 303 303 403 403 403 403 403 403 403 403
	7		DUMMY RE	0 ° 0 88010	0°0 8070		2000.		1500.		
	48 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	* * *	3	G			00		00		1115 4715 473 103
	0000 0000 0000 0000	**			**						0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		*					STORAGE		CAPACITY#		

W44 400	000000	MW00WF W0FM00 MW00WF W0FM00
No F N 00	20000	40444444444444444444444444444444444444
		에 (A O 에
N 0 7 7 0 0	NATANNE COOCO	00000 N N N N N 00
N	10000000000000000000000000000000000000	8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
oo o o	***** O	M 4 4 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
	& • • • •	
	00. 00. 00. 00. 00. 00. 00. 19.49 14.57. 172.	81110
040400	000000 V	
N		ณเกณ
	10 17 17 16 13 16 13 16 18 18 18 18 18 18 18 18 18 18 18 18 18	20, PLAN 90, PLAN 90, PLAN 90, PLAN 90, PLAN
80	0	20, PL 14. 117. 117. 24. STOR 0. 0.
00477000 F • • • • • • • • • • • • • • • • • • •	0.000000000000000000000000000000000000	M 744444 NONGOO
	E • • • • • • • • • • • • • • • • • • •	
	**************************************	2
0 4 7 7 5 0	F	24
n.	A STATE OF THE STA	27 A T I I I I I I I I I I I I I I I I I I
	Ф W	
	• • • • •	
0.410.640		030000 00000 00000 00000 00000
	οοος – Σ ω Σω Σμ	
	THOUS ACTES	
0 7 7 0 - 0	**************************************	7 W W W W W W W W W W W W W W W W W W W
	# #	ALM IN THE STATE OF THE STATE O
2 M D N + 2	00000	rwuren oana-o
		### ### ### ### ### ### ### ### ### ##
		4-4

0000000				288 388 388 388 388 388 388 388 388 388	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	. 01	0 M O C	* • • •	• • • • • • • • • • • • • • • • • • •	•	
000000				243. 869.	- 3 M M - 3 M M - 3 M M	2,2	: М - М ЗГОО				
000000	200LUME 5661. 583. 73.11 1703.			610 610 80 80	000 000 174 144	143 CV	M 33340		4 0 0 0 0 0		
00000	TOTAL		₩.	000		· NO		00			
	72-HDUR 343. 10. 10. 23.11 1703.	31,	2, RTIO	44 W	Man Man	• • •• •	W @ ₩ O		* * * * * * * * * * * * * * * * * * *	72 - HUUR 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	37.
DIVERSION 0. 111. 0. 0.	24 1400 150 150 150 150 150 150 150 150 150 1	STORAGE II	20, PLAN	GUTFLOW 23.	27. 41.	8 0 1 C 8	M				# G G G F #
000000	1461. 1461. 41. 9.83 725. 894.	MAXIMUM STOP	TATION	15. 396. 791.	50.	 O &	13 6 0 4 3 6			1712. 48. 11.53. 1048.	MAXIMUM STORAGE
000000	1 5 E A K 5 4 9 •	•	50	* * * * M = -	 चित्रक	0.5	 N o ⇔o	60		0.00 0.00 0.00 0.00 0.00	
· · · · · · · · · · · · · · · · · · ·	INCHES INCHES INCHES INCHES ACTIONS CC R			**************************************	9	· ·	10.00	• •	9	CPS CAS INCHES AM AM THOUS CU M	
••••• •••••				32.1.2	1149. 115. 20.	••	ທິກີທີ່ວ	• •	475. 0.		

1898 1746 1746 1746	ww ∞ ∞ w a → o o o a o o o o o o o o o o o o o o			⇔₩4 04000
100 100 100 100 100 100 100 100 100 100	0 WW W V4UNU→O OO→OOO		487 1739 2625 389 50	
N 00 N 0	00 000 0000 0000 0000 0000 0000 0000 0000	4 CALUME 11 4 Co 11 4 Co 11 4 Co 11 4 Co 11 Co 1	2000 2000 2000 2000 2000 2000 2000 200	74.00 4.00 4.00 4.00
		A L		
24 44 40 40 40 40 40 40 40 40	0 N40040 00W000	201	2002 6 2005 6 20	10 m
		# HOUR # # # # # # # # # # # # # # # # # # #		
53. 623. 2767. 578. 48.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 4 8 5 2 1 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 4 4 8 9 4 5 8 9 4 8 9 8 9 8 9 8 9 8 9 9 9 9 9 9 9 9	M 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
001710# 32. 381. 748. 57.	87DR 112. 15. 15. 15. 00. 863.	24**HOUR 1504. 43. 43. 43. 859 40. 850 85. 8682.	7 0 3	8 - 1 - 6 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8
Ň		8 5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	9 7 0	
0.000 0.00 0.000 0.00 0.000 0.00 0.000 0.00 0.00	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6=HGUU 2655 171 1317 1625 1625 81ATION S	7 91. 7 91. 14439. 1310. 130.	0 0 0 N
N.		X * * *	7427	
		ພິວ ໝໍ ດ. ວາ ດ. ນ		
			7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- 1.08 W
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
17. 2364. 1328. 121.	100 110 277 277 200 000 000	I NC POUS O	700. 3562. 1681. 39.	94 - 4 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6 -
			™ +	
45.50 45.50 66.50 1651			40000 44000 47000 47000	0 M O 3 M

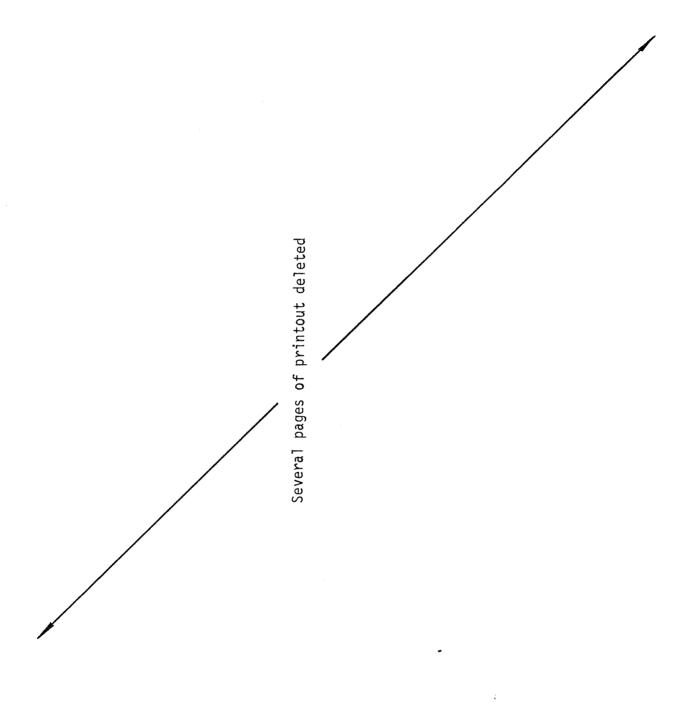
• • • • • • • • • • • • • • • • • • •		3000 4000 4000 4000 4000	~ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 M 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
		44 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	# * * * * * * * * * * * * * * * * * * *	2 M M O O O	
5000 1000 1000 1000 1000 1000 1000 1000		4886 1245 5341 748 748	™ 000 ← 000 ← 20 00 ←	9 8 8 9 0 9 19 9 0 3 10	VOLUME 90555* 2504* 4.00 101*60 7488* 9236*
863. 863. 101AL	•	1239 6239 974 91	₩ W ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩	3 * * * * ° ° ° ° ° ° ° ° ° ° ° ° ° ° °	T01AL
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	90. N 2, RTIO	# # # # # # # # # # # # # # # # # # #	MWW WF 60 4 MH	2 4 3 6 3 0 0 9 8	72*HUUR 1509. 43. 4.00 101.60 7488 9236.
DIVERSIUN 0.00000000000000000000000000000000000	RAGE = 20, PLAN	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	N - N - N - N - N - N - N - N - N - N -	DIVERSION 0. 863. 0.	24. 33620 36. 36. 91. 671. 8719.
963. 0. 0. 0. 0. 0. 4140. 4140. 27.87. 27.87.	MAXIMUM STORAGE. STATION 20	1187. 7097. 7750. 150.	03.00 ⊶3.000 • • • • • • • • • • • • • • • • • •	00 M M OO M OO M M O	6-HDUR 6-648. 188. 184. 1.76 1.76 1.76 1.76 1.76 1.76 1.76 1.7
2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		0 0 M 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PEAK 7215. 204.
SESSON THOUS OF THOUS OF THOUS OF THE PARTY		36. 1050. 5633. 2533. 559. 1	Series of the se	* • • • • • • • • • • • • • • • • • • •	INCERS INCHES IN
0 9 % % 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2000 3000 3000 3000 3000 3000		* • • • • • • • • • • • • • • • • • • •	

MAXIMUM STORAGE &

	**************************************		C M M C C C G G G G G G G G G G G G G G			7440 7460 9446 1443 814	% % % % M N
	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	MW MM MG Q L M M	6.8.6.6 0.19.000 0.00 0.00			1581 4788 10473 1236 1628	W & Q W W W
	716 1827 8236 1095 61	SPENONU SPENON		135273- 3831- 5.98 151-77 11185- 13797-		1058 31058 17578 1778	
7	110 110 110 110 110 110 110 110 110 110	0000 7000	788. 863. 00.	040 F W F * *	80	517. 2402. 14524. 1760. 197.	24 4 0 20 0 4 0 3 4 4
N Z, KTID	1111 1704 1704 1709 1009 1009	W & H W W H	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	22.7 1.5.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5 1.5.5	220. 2, RTI	2032. 15981. 1823. 222.	80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
20, PLAN	001FLOW 99. 451. 9985. 178.	N N N N N N N N N N N N N N N N N N N	DIVERSION 0.0 8643. 689. 0.0 12.	0 - M 0 0 M 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0017FLOW 1834. 2556.	33.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3
STATION	66. 1471. 0811. 2041. 73.	0000 0000 00000 00000	0 98 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	010 010 010 010 010 010 010 010 010 010	MAXIMUM STC STATION	11011 17111 1427 1256	M W W W W W W W W W W W W W W W W W W W
	14150 0070 2683 799	10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	######################################	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1563. 15296. 4375. 116.	3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
	3840. 3852. 3852. 850.	144 140 140 140 140 140 140 140 140 140	0 0 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	INCHES OF THOUS CU		13648. 13648. 5648.	2 2 8
	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			78. 1295. 6676. 742.	28.8.2.2.4.1.3.4.4.3.3.4.4.4.3.4.4.4.4.4.4.4.4.4

4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				0100m30 N90m00 N90m00	N → N O → N M N M N	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
0 M M O O O O				1109 6787 14484 1728 112	~ # * * * * * * * * * * * * * * * * * *	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
- * * * * * * * * * * * * * * * * * * *	AL VOLUME 202810. 5743. 8,96. 227.54 16770.			14532 17334 17334 17334 1234	M	0 M M M O O O O O O O O O O O O O O O O	L VOLUME 2802097 79358 79358 314.38 23170 28579
0 M M M O O O O O O O O O O O	E • • • •	•	.	700. 3556. 19968. 1965. 266.	W W 000 24000WW	0 0	101A 888**
• • • • • • • • • • • • • • • • • • •	78.4HOU 3.4HOU 8.96 8.96 16770 8.66	333. 2, RTIO	-	331 941 373 300 131	6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		72+H0UR 152 128-38 314-5 23170 28579-
01 VERSION 8663.	24-HOUR 771118 218. 8-17 207.62 16875.	0. 0	1035. GUTFLOW	199. 789. 833. 775. 257.	870R 456. 457. 75.	01VERSION 00. 865. 865. 00.	24+HDUR 10733. 1304. 21300. 26273.
0 M M M O O O O O O O O O O O O O O O O	15410UR 15410UR 1436. 103.73 7445.	AXIMUM TATION	862.5	136. 2621. 2485. 27885. 2944. 441. 37.	1000 0 M	0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	6-HUUR 24 21168. 1 599. 5 5.61 142.49 10502. 2 12954. 2
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	165EP 4 20 4 7 1			1112. 423. 014. 528. 157.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- • • • • • • • • • • • • • • • • • • •	PEAK 22833. 647.
	CFS CMS INCHES MM AM HOUS CU H			6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ง จ. • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •	INC CARS
***** ********************************	9 9 19 19 19 19 19 19 19 19 19 19 19 19 19			182 187 75 1	3 X X		1 7 4 8 7 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8
0 # # 2 # # 0 # # # 0 0				1943 1943 19597 9343 1012	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	

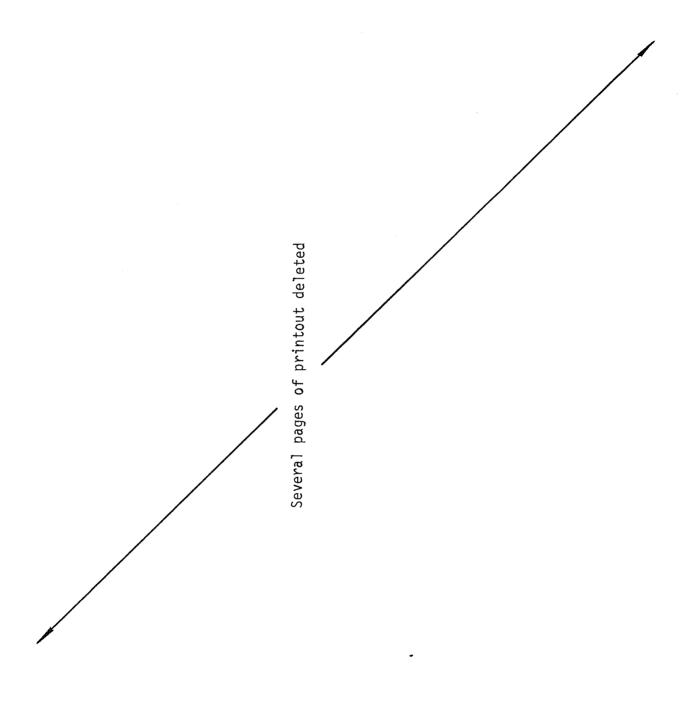
..

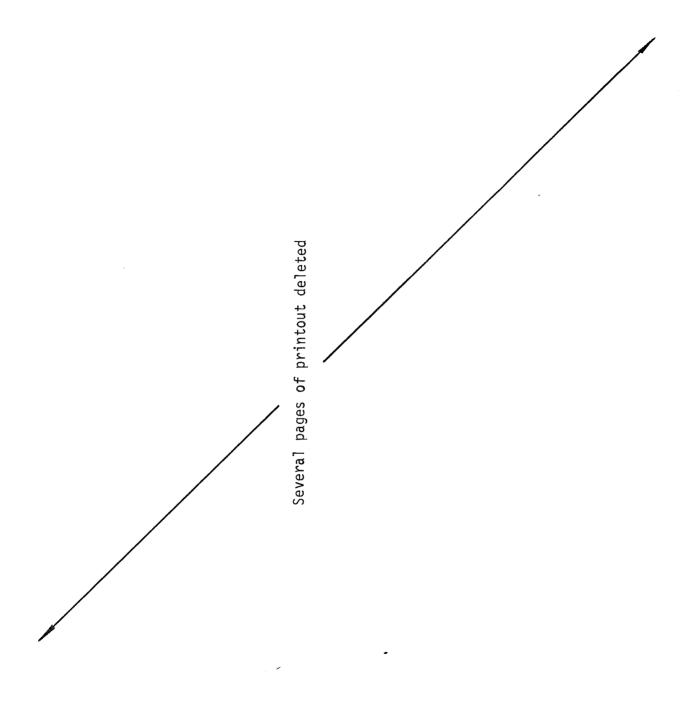


```
ILPR
0
           AANCST
0.00000
          ADSCNT
0.00000
EXPECTED ANNUAL FLOOD DAMAGE COMPUTATION NOMG ISAME TRGT DGPRT IAGST AC
                                                                                                                                                                                       NO ADJUSTMENT OF AVERAGE ANNUAL DAMAGES FOR THIS DATA
                                                                                                                                                                                                                                                                                                                               PLAN 2
                              NFLOD
                                                                                                                                                                                                                                                                                                                            FLOOD DAMAGES FUR STATION 2030

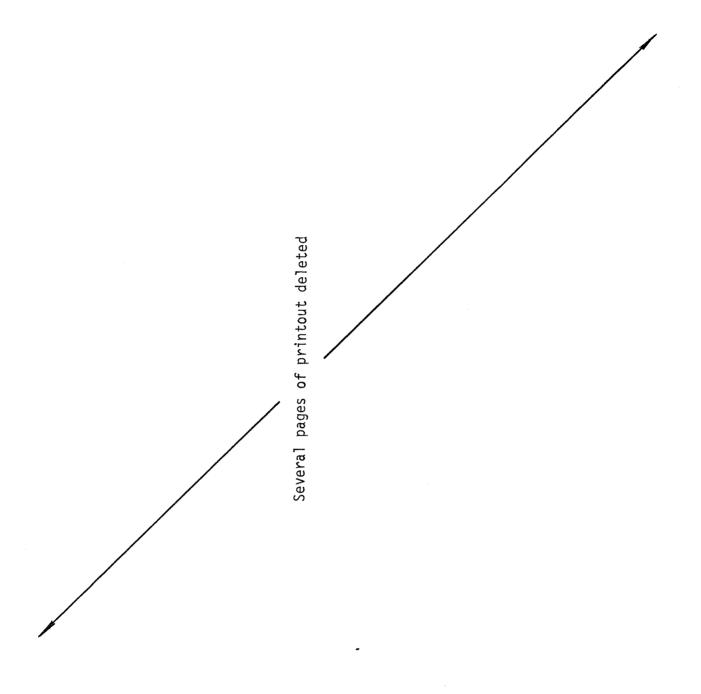
NO. FLOW FREG INT SUM
1 140. 6.000 284 0.00
2 1115. 5.402 1.752 2.86
4 2080. 1.769 1.072 4.28
5 3507. 867 7.76 6.06
6 5756. 323 391 5.48
7 9253. 005 014 .65
                              STATION 2030
                                                                                                                                                                                                      FLOUD DAMAGES FOR STATION 2030
        19TA
                                      EXCD PROB
9411 6.00 .284
1139. 5.462 1.752
1940. 3.097 1.775
4 2921. 1.769 1.072
4 4312. 867 7.95
6 6699. 323 391
101691. 095 136
8 15177. 0020 037
                                                                                                                                                                                                                                                                                                                AVG ANN DMG
                                                                                                                                                                                                                                                                                                                                                                                                                                                       BFT
                            FREQ PRAY FUR PRAY PREQ PREAK PREQ 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030. 1030.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       AVG ANN
```

	กเก								
IAUTO		**	IAUTO 0						
ISTAGE 0	44 44 40 80 40	*	ISTAGE 0						
	MA WWW WWW WWW WWW				405CLW 405CRW 1147. 19.78 3351. 4133.		1377* 1377* 1377* 23.88 4021*		# • • • • • • • • • • • • • • • • • • •
INAME	A P E	# # #	INAM		4	· · · _· ·	<i>></i> 3	141	AL VOLUME 81034. 2295. 1.57 39.79 6700.
JPRT	7803 388 503 503 35	· · · · · · · · · · · · · · · · · · ·	F 0	RTIO	101	RTIO	TOTAL	RTIO	101AL
JPL T	PHS READ 1 7 7 6 423. 64.	Σ. Σ.	JPLT	PLAN	72 + HOUR 475 - 176 19 * 90 3351 - 4153	PLAN 1	72 #HGUR 8 8 23 * 94 23 * 894 4021 * 4960 *	PLAN	72°HDUR 1351° 38° 1°57 39°79 6700° 8265°
ITAPE	HYDROGRA 11, RATIO 10. 13. 33.	**************************************		T 30	24+HQUR 1433- 16-89 2844- 3508-	r 30	24 HUUR 1713 4 20 49 8 20 19 4 419 419 4	T 30	24=HQUR 2851: 81: 33: 55:60 5658:
POOL IECON	NERATE PLANT	*** COMBINE	BAY POOL IECON	∢ .	6+HGUR 21:71 61:71 60:30 1060 1308	RAPHS AT	2571. 73. 73. 757. 757. 1275.	⋖.	4375° 124° 124° 128° 12°89 2171°
FOREBAY ICOMP	13LY GE 3. 450. 104. 3.	***************************************	TO FOREBA ICOMP 3	нуряшскарн		HYDROGRAPHS		HYDROGRAPHS	
INFLOW TO F	PREVIOUSL 64. 413. 129. 10.	***		M 0F 3	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	M OF 3	2676 X 746 X	4 OF 3	0.00 0.00 0.00 0.00 0.00
LOCAL INFL	0.000 000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.		COMBINED INFLOW ISTAG	SUM	INCHES INCHES ANCHES ANCHES ANCHES ANCHES ANCHES ANCHES	₩ N N	CPS CMS CMS INCHES MM AC-FT	SUM	CFS CRS INCHES MA AC-FT
		* *							
	ល្ខៈ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។ ។	*							





	00		00																												
	• •		• •			58.	381	1200	0 0	287.	•	170	514	554	232	•96		" 0	•	• •	•										
LSTR	* * 0		10000. 8670.			¢ 0.17	321	1200	7 C	315		107	080	575.	255	105		0	0	• •	• •	• •									
IDVR 0 STORA	•					27,	280	0	2 C	344	•		443	592	282	115.		•	0	•	• 0		Š	7070	1087	-	18,85	- 5			
9 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		PDSCNT 0.05040	9000			19.	247.	1200.	0020	374		• n	400	6 02	311.	125		0	0	•	•	• •	5	.i							
F401 0 X 000*0	60	DATA T PANCST • 02300	000			16.				407		• •		0.7	45.	36.		0	•	•	•	• •		X C 2 4		.74	18.85	5016		607.	
NO RE LES ON RE ON	00	NG PLANT EN PWRCST	2300	S, PLAN	30 to			-		-	STOR	•		7			GNTGWO		•0	• •	•	• •		7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	33,	53		0 V C	,	GE #	
PLAN 2 ROUTING DV IRES ISAME 1 1 SAME LAG AMSK	• • • • • • • • • • • • • • • • • • • •	PUMPING MN PMPUN 0. 1500.	.000	ION 30	č	.	801	0	~ י~	* 7 7 7 7 * 7 7 7 7			, ,	1.0	3.8	14	ā							HOOK.		71.	30 E	440		IUM STORAGE	
AVG 0.00 NSTDL 0		G.		STATIC		2	6	3.1	000	484		ທີ່		000	424	161.		0	• •	• •	ċ			.						MAXIMUM	
CLUSS 0.000 NSTPS	100000	# 0000	70.			10.	131.	697.	1200	526		ឃុំ	0 1 1 1	586	462	176.		0	•	•	•	• •		•	-		.	 2	=		
0°0 0°0	1200		67.			14.	105	574.	.002 200	578.		់		268.	497.	193.		0		•	•	• •			ນ ຄ.	INCHE	-2 -1	ALCIN ALCIN	3		
	00		•••				• •			_		ທໍາ	•		· a			0	.0	•		• •									
	STORAGE		CAPACITY# COST#					917	120	1200			~ <u>u</u>	563	25	211															



	1122000 122200 122200 122200 122200 122200 122200 122200 122200 122200 122200 122200 12220 12200 12000 1000 1000 10000 1000 10000 10000 10000 10000 10000 10000 1000	000000 00000 00000 00000 00000 00000		112000 12000 12000 12000 12000 12000	NW4W NW4W NW64000 NW640000 NW660000000000000000000000000000000
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			000000 0	20134 27623 40126 392126
	1120007 1120007 111111111111111111111111		AL VOLUME 623.66 1766. 1.21 5315.62 63157.	44711111111111111111111111111111111111	1591. 17260. 37084. 40146.
RIIO 8	2000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000 00000 00000 00000 00000	2008 200 200 201 201 201 201 201 201 201 201	A	1298. 14395. 26071. 40137.
PLAN 2, RY	R 25645.	ING PARSO PA	-HGUR 72-H 34. 34. 14.14. 556. 14.14. 5381. 2937. 8 25851.	MR COST 7 280. 120	1063 11666 140093 40093
1 305,	0UTFL 1910 1200 1200 1200 1200 1200 1200 1200	000000 000000 000000000000000000000000	0008 34. • 114 • 114 • 114 34. 8 TORAGE	AP CUST 2531. 255. 1200. 1200. 1200. 1200.	9198. 33524. 40004. 39685.
STATION	184 1200 1200 1200 1200 1200 1200 1200 120	00000000000000000000000000000000000000	PEAK 6**H 2000** 34** 34** 354	00 000000 M Z • Mc0000 M	70508 318928 897858
	112000. 112000. 12000. 12000. 12000. 12000. 12000. 12000. 12000. 12000. 12000. 12000.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1200. 1200. 1200. 1200.	5312. 30009. 39645. 39645.
	1986 1780 1780 1780 1200 1200 1787 1862 2550 2550 2550	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THOUS O	400000	39958
	112200 12000 12000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		PH 1917028 PH 2069869 R246 1073 1200 1200 1200	22.25.25.25.25.25.25.25.25.25.25.25.25.2

	ç	2250	0000	2000		2250		
	,	2250	7780	0500	20.50	2250		
	0	G	2250	2250	7250	2250	VOLU 18646 18026 18026 18026 1803 64963	
	•	0	2250	2250	2250	2250	2-HUUR 10-10-10-10-10-10-10-10-10-10-10-10-10-1	
(J)					•	2250	14.HGUR 72=H 1200. 34. 14.14. 14.14. 2381. 2381. 2937. 644.	
LOED C	• 0	0	2250	2250	2250	2250	1200. 1200. 34. 34. 3.14 3.54 595. 734. 0.00 STORAGE =	
	•	0	2250	2250.	2250	2250.	2200. 12300. 34. 34. 33. 33. 33. 34. 34. 34. 34. 34	
	• •	•	2250	2250.	2250.	2250.		
	0	5	2250	2250	2250	2250.	TADUCA SASSAS AT THOUS CONTAINS SASSAS AT THOUS CONTAINS AT THE CONTAINS AT THOUS CONTAINS AT THOUS AT	
	• •		.050	0 0	4620	2250.		

	ST	14. 14.	CTE	7,4	٠. ۵	TION	AANCST	
	0.00	10	Λŧ	1	0 000	0000000	0000000	0
DATA	STATIC	305	-					
		± × ±						
.700 1500.	10.0		0.000					
		27.500	10.500					
			13,000					
0007	000 3352		200.00					
			0000					
	000 000		000.000					
	`		200,000					
	_		000 000					
	11835,000	11250,000	585,000					
MA AC TROPHER OF ANY DACE	* 30 Y G 40 Y		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	****				
	4		יים מיים	1				
FLOUD DAMAGES FUR STATION	STATION	305 PIAN						
	PRUB							
STOR	- Z	HADE MIS	-	TYPE 3				
1035700	0.00	-	٠.	0.00				
1486. 700	257		. n	77				
3587			18,50	2.69				
5904		-	107,26	ນູ້ນ1				
1556			231,56	8.58				
15876.	.075 3	311,36 300	300,95	0.41				
•			223,56	90.6				
38600		110,98 106	106,13	28.				
9 53875004			75,28	3.85				
AVG ANN DMG		1110.21 1064.8		45.40	•			
		- 5+ 	ı					
TELLING DAMAGES FOR	201-4-00	505 FLAN	v					
0013	0 F	7024		e 25>+				
	000	-		7 L				
28.00	,		00.0	00.0				
in in	6.07		2	60				
1596.	.150	1.80	1.40	40				
2659			5,36	1.28				
5655.			58,15	2,84				
13353.	-			4,24				
25851.		82,30 79	80.6	3.23				
9 40146004	.008	57.39 64	80 TT	2,91				
AVG ANN	9#4	345,87 330	330,89	86.1				
*	•							
AVE ANN	8F T	764.34 733	733.92	30,42				

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIU ECONOMIC CUMPUTATIONS FLOW IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILDMETERS)

OPERATION	STATION	AREA	PLAN	RATIO 1	RATIO 2	RATIOS APE RATIO 3	PPLIED TO FL	OWS RATIO 5	RATIO 6 1.50	RAT10 7	RATIO 8 3,25	RATIO 9
HYDROGRAPH AT	01	35.10	,-	1343. 38,02)(1343. 38,02)(16111 45,62)(16111,	2685. 76.03)(2685. 76.03)(3759. 106.44)(3759. 106.44)(5370, 152,06)(5370, 152,06)(8055, 228,09)(8055, 228,09)(11814. 334.54)(11814. 334.54)(17453. 494.20)(17453.	669 669 669 669 669
ROUTED TO	110	35*10 90.91)	→ ~ ~ ~	1343. 38.02)(586. 16.65)(1611. 45.62)(666. 18.86)(2685, 76,03)(909, 25,73)(3759. 106,443(1085, 30,723(5370. 152.06)(1324. 37.48)(8055, 228,09)(1758, 49,78)(2 2 2 4 2 3 5 4 2 4 5 4 5	9 4 0 0 M	M 60 00 00 00 00 00 00 00 00 00 00 00 00
ROUTED TO	1030	35.10 90.91)	- ~	941. 26.65)(525. 14.86)(1139. 32,24)(594. 16,83)(1940. 54.94)(838. 23.73)(2921 82,713(1005, 28,473(4312. 122.103(1252. 35.463(6699. 189.70)(1583. 44,83)(. 50 50 50 50 50 50	15177 29.77 10185	85 W W W W W W W W W W W W W W W W W W W
HYDROGRAPH AT	50	35,10 90,91)		1343. 38.02)(1343. 38.02)(1611. 45.62)(1011. 45.62)(2685. 76.03)(2685. 76.03)(3759. 106,443(3759. 106,443(5370. 152.06)(5370. 152.06)(8055. 228.09)(8055. 228.09)	11814, 334,54)(11814, 334,54)(17453 494.201 17453 494.201	NONO
ROUTED TO	5 0	35.10 90.911	`\ \\	1343. 38.02)(1346. 38.12)(1611. 45.62)(1549. 43.86)(2685. 76.03)(1830. 51.82)(3759. 106.44)(2903. 82.20)(5370. 152.063(4524. 128.12)(8055. 228.09)(7215. 204,32)(11814. 334.54)(10985. 311.07)(23628. 669.07) 22833. 646.57)
ROUTED TO) 0808	35.10 90.91)	N	941. 26.65)(940. 26.61)(1139. 32.24)(1115. 31.56)(1940. 54.94)(1430. 40.49)(2921. 82.711(2080. 58.901(4312. 122.10)(3507. 99.31)(6699. 189.70)(5756.	10191 288,58)(9253, 262,02)(15177. 429.77)(14254. 403.64)(20603. 583,423 19694.
HYDRUGRAPH AT	30	10.00	_ ~~	453, 12,61)(453, 12,81)(543, 15,38)(543, 15,38)(905 25,63)(905, 25,63)(1267. 35.88)(1267. 35.88)(1810. 51.25)(1810. 51.25)(2715. 76.88)(2715. 76.88)(8 - 8 -	_ a0 • a0 •	24.55 24.55 34.55 35.55
3 COMBINED	e R	80.20 207.72)	- N	2219. 62.84)(1660. 46.99)(2676. 75.79)(1939. 54.90)(4563, 129,21)(2602, 73,67)(6859; 194,23)(3752; 106,25)(10154. 287.53)(5793.	15693, 444,39)(8998, 254,81)(23748. 672.47)(14293. 404.74)(35345, 1000,80)(25799, 730,54)(48011. 1359.53) 38535. 1091.19)
ROUTED TO	302	80.20	7 7	1200. 33.98)(1200. 33.98)(1200. 33,98)(1200. 33,98)(1200. 33.98)(1200. 33,98)(1200. 33,98)(1200. 33,98)(1200. 33.98)(1200. 33.98)(1200. 33,98)(1200. 33,98)(1200. 33.98)(33.98)(1200° 33.98)(33.98)(1200. 33,983 1200. 33,983
			* "	PEAK STORA 1036. 1278.)(749.)(GES IN ACR 1486. 1833.)(1088.	E FEET (10 3587, 4424,)(1552, 1914,)(00 CUBIC ME 5904, 7283,1 1596, 1968,1	11788.)(3280.)(3280.)(15876. 19583.)(5655. 6975.](24937. 30760.)(13353. 16471.)(38699. 47734.)(25851. 31887.)(50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

VAR 1 6620.	VAR 2	VAR 3	SYSTE VAR 4	SYSTEM OPTIMIZATION RESULTS VAR 4 VAR 5 VAR 6 0. 0. 0.	ZAT10N 5	RESULT:	5 010 7 665.	8 ^10		2250 •	PMP 10	0,0
		CUNITS	SYSTEM (SYSTEM COST AND PERFORMANCE SUMMARY (UNITS SAME AS INPUT - NORMALLY 1000'S OF DOLLARS)	PERFOR	MANCE SI	UMMARY S OF DOL	LARS)				
TOTAL SY	STEM CA	TOTAL SYSTEM CAPITAL COST * * *	* * *	* * *	*	*	7099.					
TOTAL SYS	STEM AM	SYSTEM AMORTIZED CAPITAL COST * * *	ITAL COST	* * * *	* *	*	358					
TUTAL SY	STEM AN	TOTAL SYSTEM ANNUAL DOM, POWER AND REPLACEMENT COST	WER AND F	REPLACEME	NI COS	*	248	:				
TOTAL SY	STEM AN	TOTAL SYSTEM ANNUAL COST	* * *	** * * * * * * * *	*	*		509				
AVERAGE	ANNUAL	AVERAGE ANNUAL DAMAGES EXISTING CONDITIONS	EXISTING	CONDITIO	* * 5NC	*	1177.					
AVERAGE	ANNUAL	AVERAGE ANNUAL DAMAGES OPTIMIZED SYSTEM	OPTIMIZE	D SYSTEM	*	*	375	- -				
AVERAGE	ANNUAL	AVERAGE ANNUAL DAMAGE REDUCTION (BENEFITS)	CTION (BE	ENEF 1 TS)	*	*		808	N.			
AVERAGE	ANNUAL	AVERAGE ANNUAL SYSTEM NET BENEFITS	BENEFITS	* * *	* *	*		61	. 161			

***** OPTIMIZATION OBJECTIVE . MAXIMIZE SYSTEM NET BENEFITS ****

·
NTBNET 113.
18NFTS 546.
ANDMG 632.
ANDGBS 1177.
TANCST 433.
ANDMPR 201.
ANECST 232.
1FCST 4600.

EXHIBIT 6

SIZING LEVEE AND CHANNEL MODIFICATION (Unconstrained)

							TEGEND	N = NEW INPILE DATA	R = REVISED INPUT DATA	O= REVISED INPUT DATA																		
			500	3000	280) (4) (4)	6				@ _{\$}		0070		7.0					6480		U	4.08	10.63		•	•	
•	• •		 	1920	2 4	31	Ĉ.				'n	- 4	> X	•	0,4		•			5620			3,53	8.91		•	•	
	 5		175	1290	540C	20.0	•				>	0000	2 20 5	٠,	بر در		9°.			4800	# \$	•	2,73	7,23		•	•	•
	2.20		0 6 1	1040	2 S 2 S 2 S	900) U		6300	24000	6.	9869	3	•	6.9	t.	n o			4220	73	<u>.</u>	2,53	5,85		•	•	-
			85	910	775	96		I	3080	10250		\$005	21000		N.		30.5		4500 340	3200	21000 25	1,76	1.73	37.8	M	- 66 •		•
	1,00		20	840	5 6 6 6 6	, C2		TION REACH	24.35	6100	IC.	N 0	15100			0°5	27.0						و د د	1.13	27,00	> ₹ •	0 §	* O
	0.70	R INFLOW	33	008	1250	82		MODIFICATION	076	2059	∋)v. •	17.05	12100	~ .~		₩. 0.	53.0	40504	> ~! > ~! > ~!	1740	00121	1 · 1 ·	0 0 0		50.55	.42		•
, Ogv	00.50 -2000	RESERVOI	25.	760	1540	120 35		CHANNEL	475	1020	າ ຈີ	1380	10000	•••	S.	0°9-	16.0	023	149	1380	0000	76.	7.70		: ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° °		017	•
JNCUNSTRAINED	0.000 0.30	OTENTIAL	~	720	•	160 36	1030	Ten IAL	L.	200		72	-33	÷ •	ruin.	40 40		00	30	M S	,	~ •	, e		90 6 0	, 1	۰ ۲	. €5,
1000000	0 ~ 15 0 ~ 2	o -	- 2	500	2200	2. 2. 03.	_ :	2		0201	•	N M	3	00	1117	ຫ ຸ	10	1700	3	1030		69.	J. 0.1			, o	00	•

														CEGEND	N = NEW INPUT DATA	R = REVISED INPUT DATA	- DEVICED INDUT	- REVISED INPU																		NI Q	EALIVE AND TOEAN	
3000	2720	280		Ç					(<u>ښ</u> رو	•	6480		7,91				6480		16.4		70.0			y 0 -	1000	006	5	30	•						1 305 OMITTE	UNDER 10 COMPARE THE RELATIVE EFFECTS OF THE CHANNEL AND FEVEF IN DEPILITING POLINICEDEAN	
515	3330	365	3 (•		9				ď		5620		6.2				5620	1.1	13.9		2			• 140	4	1110	120	<u>.</u>							DAMAGE REACH	FFECTS OF 1	MAMAGES.
375	3980	470	M 1	,						ŀ		4800		11.8				4800		⊕ •		0 			2.5	430	1330	155	20							NOTE:		
190	0097	605	7 0 0 0) • U			7	0000	70753	0		4220		8				4220		80°		•			۶9	350	1530	002	32	-		•						
910	2100	775	0 6	>				00000	> 1 3 5 4 5 4 5 5 5 6 5 6 6 6 6 6 6 6 6 6 6 6	5	.005	3200	21000	7,2		C P	0.00	3200	21000	2.5	• • • •	50.1			80 N	305	0.00	ν γ γ	¥ 2									
50 840	5370	565	: \$		ISS REACH	7	•	000))	2.5	- 05	2280	15100	5.0		6 E E	28.0	2280	15100		3 (3)	- M.		•	1	280	019	950) 		200	L.	_					
33	5360	1250	? ; ;		AND/OR BYPA			7000	χ≘ })u m		1740	12100	>.		4000	222	1740	12100	⇒ પ જ દૃ	n =	34,5		UNE TAN TOU	-	592	000	<u>,</u>) }		FOREBAY	JOH LEVEE						
900 N. Z.	0.80	0 ° ° °	> 15 3 PM		LEVEE AND		7.4	0.00)		01.	1380	00001	1.6	e. • :	- L	671	1380	10000	0 T 0	> 4 • •			10.01	•	552	1020	0 - 7 - 7			NF.COM TO	OUTLET THROUGH			100001			
710	O :	3 C	, •••	3	OTENTIAL		ğ	200	. 10	3,5	· ! \$	200	n i		23.1		-	1130	.	0 T	•	23.1	90] L J	60	0 S) 1 1 1 1	25.	2	9	3 K	AVITY OU		~57	1200			
200	6 (- C	. 3		2			> 0	2030			1030	^		N 6	2	=	1030	7	20.3		20.3			12.4	2 5	40	•	M		3	3		(> 0	\$		

VIROL SYSTEM COMPONENT OPTIMIZATION
VEE AND CHANNEL MODIFICATION
INED
JOB SPECIFICATION
NHR NMIN IDAY JHR IMIN METRC IPLT IPRT NSTAN FLOOD CONTROL SYSTEM COMPONENT OPTIMIZATION SIZING LEVEE AND CHANNEL MODIFICATION UNCONSTRAINED

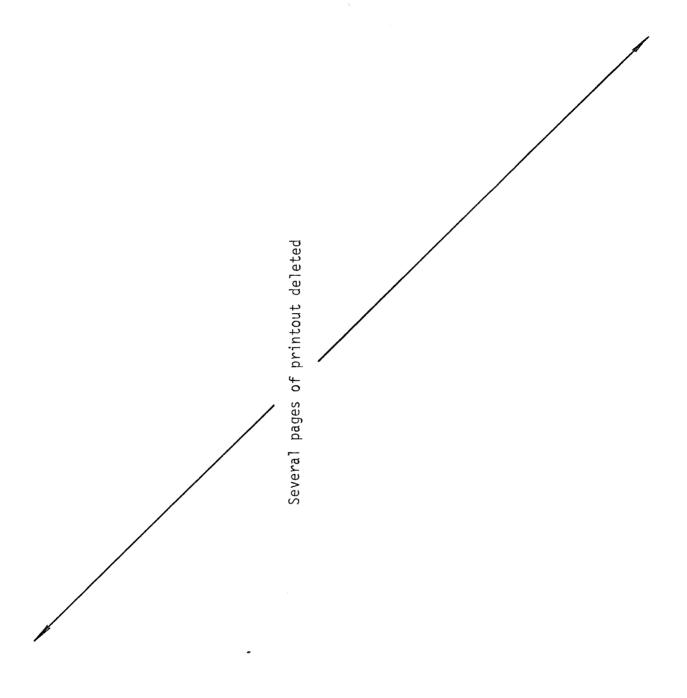
	7.6	E ZIWZ GZ	IDAY THR IMIN METRO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	IMIN METRC 0 0 ROPT TRACE 0 0	RACE O		20			
	E SO	MULTI÷FLAN NPLAN: 230 .50	ANALVSES NATIO	10 BE	PERFURMED 10m 1 1.50 2.20	M M	0			
W W W W W W W W W W W W W W W W W W W	* VAR V S	VAR 3 VAR 3	4.	OPTIM S	SYSTEM OPTIMIZATION VAR 5 VAR 6 0.	7 0	0 IV 8	0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 ·	• • •	
			FIXED COST 0. 0.0000	COST INPUT	NPUT 0.00000					
			SZ -	E N	VARCM)	VARCH13	083 DEV	TANCST 6,980	ANDMG (52,791	O FTN(NC)
			U N	ΣN	VAR(M)	VAR(M1)	08J DEV	TANCST 6,953	ANDMG (.599E+02
			SW Z	I U	VAR(M)	VAR(M1)	08J DEV	TANCST 6,925	ANDHG C	FINCHC)
DBJECTIVE FUNCTION FOR VARIABLE	TABLE 2	\$9776+02	.5992E+0	N	*6009E+02					
VAR 2 ADJ FROM ZOGE	2000.00 TO	2104.43	t) •4 Z	ΣM	VAR(H) . 200E+04	VAR(M1)	08J DEV 0,000	TANCOT 1 141	ANDHG C 51,766	G FTN(NC)
			U N	E M	VAR(M)	VARCM13	083 DEV	7.094	ANDHG (51.766	. 589E+02
			OM Z	¥N ∑M	VAR(M)	VAR(M1)	08J DEV	TANCST 7,067	SI. 9:12	SPOE+02
OBJECTIVE FUNCTION FOR VARIABLE	(ABLE 3	. 58896+02	.5886E+02	0.	.5898E+02					
VAR 3 ADJ FROM	2000,00 10	1986,30	2 -	E N	VAR(M) .210E+04	VAR(M1)	OBJ DEV	TANCST 7.103	51.766	. 589E+02
			UN Z	ΣN	VAR(M)	VAR(M1)	OBJ DEV	TANCST 7.074	ANDMG 0	. 590E+02
			S.W.	I N	VAR(H)	VAR(M1)	084 DEV	TANCST 7.046	ANDHG D	.592E+02
OBJECTIVE FUNCTION FOR VARIABLE	ABLE 2	.5887E+02	.59058+02		*5922E+02					

			E M	VAR(M)	VAR(M1)	58J DEV	A NO SECTION OF SECTIO	ANDHG (0 FTN(NC)
VAR 2 ADJ FROM	2104.43 TO	3156,65				•	•		
			EM	VARCM)	VAR(M1)	08J DEV	#ANC81	ANDMG C	0 FIN(NC)
			E W	VAR(M)	VAR(M1)	084 DEV	TANCST	ANOMG C	0 FIN(NC)
OBJECTIVE FUNCTION FOR VARIABLE	FOR VARIABLE S	. 5250E+02	*5262E+02	, 5273E+02					
VAR 3 ADJ FROM	1986.30 TO	2979.44	EN CA	VAR(M)	VARCM13	0.000	7ANCST 9.878	37.259	0 FIN(NC)
			NO N	VARCM)	VAR(M1)	08J DEV	TANCST 9,835	37.416	0 FTN(NC)
			E OU	VARCH)	VAR(M1)	000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TANCST 9.792	37,596	SOTATIONS.
OBJECTIVE FUNCTION FOR VARIABLE	FOR VARIABLE 2	.4712E+02	.4725E+02	.4739E+02					
VAR 2 ADS FROM	3156,63 10	4734,97	E M	VAR(M)	VARCM13	08J DEV 0.000	1ANCST	30,881	429E+02
			N W W	VARCM)	VAR(M1)	V30 L80	TANCST	SI . OUT	# TN(NC)
			Z X X X X X X X X X X X X X X X X X X X	VAR(M)	VAR(M1)	08J 0EV	TANCST	SI.211	- FINCNES
OBJECTIVE FUNCTION FOR VARIABLE	FOR VARIABLE 3	42905+02	.4303E+02	.4315E+02					
VAR \$ ADJ FROM	2979•44 TO	4469.17	EM EN OH Z	VAREM) 473E+04	VAR(M1)	000°0	14.041	ANDHG 23.604	. S76E+02
			N N N N N N N N N N N N N N N N N N N	VAR(M)	VARCM1)	OBJ DEV	14NCS1	ANDMG L	# FTN(NC)
			N N N N N N N N N N N N N N N N N N N	VARCH)	VAR(M1)	08J DEV	TANDON TO SOLV	ANDMG 23.885	TTN(NC)
OBJECTIVE FUNCTION FOR	FOR VARIABLE 2	.3764E+02	.3772E+02	*3780E+02					
			N N N N N N N N N N N N N N N N N N N	VAR(M)	. 701E+04	083 DEV	1ANCST 23.176	19.277	0 FIN(NC)
			E S C C C C C C C C C C C C C C C C C C	VARCA)	VARCHI)	08J DEV 0.000	14NCST	ANDMG (21.880	391E+02
VAR 2 ADJ FROM	4734,97.10	4939,90	≠N EM U→ Z	VAR(M)	VAR(M1)	087 DEV	TANCST 14,319	N S O S N S N	# FTN(NC)
			EM LM UN	VAH(M)	VAR(M1)	000°0	1 *NCS1	Z3,247	* MISE + OR
			E M	VARCH)	VAR(M1)	000 000	TANCST 14.197	23.438	. FTN(NC)
OBJECTIVE FUNCTION FOR VARIABLE	FOR VARIABLE 3	.3737E+02	.37516+02	.3764E+02					

			ž -	EN	VAR(K)	VARCHI)	08J DEV	74NC97	ANDHG 16.449	0 FIN(NC)
VAR & ADJ FROM	4469,17 TO	5139,54	2	EM EN	VAR(M) *494E+04	VAR(M1)	083 DEV	15.081	ANDMG 20,683	367£+02
			2 -	I M	VAR(M) .514E+04	VAR(H1)	090 DEV	18.981	ANDMG 20.683	.367E+02
			UN.	EM EM	VARCM)	VAR(M1)	083 DEV 0,000	TANCST 15.634	20.913	# FTN(NC)
			UM	EM	VAR(M)	VAR(M1)	083 DEV	15.08T	ANDMG 21.141	O FINENCE
OBJECTIVE FUNCTION FOR VARIABLE	R VARIABLE 3	.36668+02	.3655E+02		36436+02					
			U - Z	E N	VAR SM)	VAR(M1)	081 DEV	14NCS1	ANDMG 28,100	FTN(NC)
			∪ - Z	EN	VARCH)	VAR(M1)	083 DEV	14NCST	ANDMG 22.65%	O FTN(NC)
VAR 3 ADJ FROM	5139,54 TO	4985.36	N -	ΣN Σ	VAR(M) . 494E+04	VAR(M1) .499E+04	08J.DEV	. S. O. S.	ANDMG-21.306	# TN(NC)
			u -	E O	VAR(M)	VAR(M1) 4494E+04	080 080	1 N N 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	ANDHG 21.366	SONE SON
			Q №	E N	VAH(M)	VAR(M1)	06J 0EV	14NCST	N N N N N N N N N N N N N N N N N N N	G FIN(NC)
			UM	Ξ NI	VARCM)	VAR(M1)	08J DEV	TANCST 14.885	ANDMG 21.619	0 FIN(NC)
OBJECTIVE FUNCTION FOR	R VARIABLE 2	.3639E+02	.3643E+02		.3650E+02					
VAR Z ADJ FROM	D1 06"6567	5016.16	u⊶ Z	E W	VAR(M) 4499E+04	VAR(M1) 502E+04	000 * 0	15.210	A NOTE OF THE PERSON OF THE PE	TTN(NC)
		*************************************	有我们就是我们的人们的人们的人们的人们的人们的人们的人们的人们的人们的人们的人们的人们的人们		# # # # # # # # # # # # # # # # # # #	## ## ## ## ## ## ## ## ## ## ## ## ##	有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有有	# # # # # # # # # # # # # # # # # # #		•
		SUB-ARE	A RUNUFF	COMPUTATION	NOI.					
	POTENTIAL J	RESERVOIR INFL STAG ICOME 10 0	UW IECON ITAPE 0 2		JPLY JPRT	M - E A Z	ISTAGE I	IAUTO 0		
		PREVIOUSLY GENE	GENERATED HYDROGRAPHS	RAPHS	READ FROM	4 A P E				
4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	1.50	. T								
0 4 0 0 4 0 0 4 0 0 0 0 0 0 0 0 0 0 0 0	480. 400.	30.	के के ब क क ख	17.	<u></u>	0 % :	- N	111.		
	• > 1		(•		

化分类性 化分类性 化二苯甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲	JPRT INAME ISTAGE IAUTO 0	TPMP LOTA 0 0 0	TSK STORA 0.000 *1.	6300. 0. 0. 0. 24000.		TOTAL VOLUME	2020		67.61	1430.	1772.				2										TOTAL						
	0 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SAME IOPT	× 000*0	\$080°	1, R710	72*HUUR	* 8	77.	50001	1456	1772		434.	or x	alion-cr	-				27.25		529		1, KT10	72-HOUR	579	• ·	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2872	3543	
€E €E €E	APH ROUT	LL PLANS HAVE 84 ROUTING DATA IRES ISAME 1	AMSKK 0.000	6100.	030, PLAN	SA HOLLR		0 0 0	5.5	1217	1501.		AGE #	1050, PLAN	9,1011-96		20	, 78	19,73	1000		AGE m	•	050, PLAN	24-HUUR	02.21	 	7	2 C T T C		
	HYDROGRAPH IFICATION REAGING 1	₹	LAG	00	ATION 1	6. HOUR	*, 40	* 3	6.10	450.	55.2°		MAXIMUM STORAGE	STATION	310714	1091.	31.	62.	7.34	2.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4		MAXINUM STORAGE		STATION	6-HOUR	0.00			10 C	1138.	
安全	CHANNEL MODIF STAG ICOMP 1030	A 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NSTOL 0	1020	STA	다. 소 소	441.	•					XAX	A P	\ \ 0	1119	30					XAM		AT8	PEAK	1940	55.5				
在	POTENTIAL CHA ISTAG 1030	000°0 0°0 88010 88010	0 - C	0°.			n o ⊾ ≥ 	S SE		-3	THOUS CO M					8 LU	8 E U	INCLES		A TO WILLIAM)					9 (L)	00 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 N C J C J C J C J C J C J C J C J C J C		2	
#				STORAGE																										•	

MAXIMUM STURAGE #



		CST ILPR 000 2																												
	107AL VOLUME 3051999- 8642- 13.48 342-41 2523-41 31128-	ION ADSCNT AANCS1 0.00000 0.00000																												
Z, RYIO 9	72*HUUR 144* 1144* 1242* 342* 3125* 3126*	SSOS. E COMPUTATION T IAOST A																												
1030, PLAN	24*HDUR 11267* 319* 11.94 303*38 22359* 27580*	16E = 1000 DAMAG		30 °		0	٥.	.			0	0	.	> 0	•	•	00				YPE 3	00.0	6.00	200	4	. o. a	i nu	.0	0 4	21,97
STATION	6*HDUR 19364* 19364* 548* 543 130*35 4607* 11850*	XIMUM STE D ANNUAL ISAME		TYPE 5													30,200	. OA			YPE 2	00.00	. 30		ยส วาง	1,07	. O	. 20	25.	10.02
	0 00 000 000 000 000 000 000	N N N N N N N N N N N N N N N N N N N	NA	•	•	ċ	•	-	٨	æ	×	O .	3 . u	. 0	C 8	10.3	18.10	SFORT	Z		 	0	~ 04	-	- 2			٤n	0:	1,59
	SOUTH TO SOUTH	A NFLOO	1030 PL	TYPE	ċ	ċ		•	•		•	•		* •	_	_	900	UAL DA	1030 PLAN		SUM TY	0.00	000	10801	7.73	5.0	3,70	1,50	. 66	3,58
		181	STATION							٠.		7					50.100	AVERAGE AN	STATION	PRUB	F-	782	1.752	200	100	391	.136	.037	.014	0.46 3
			<									10000 10000 10000			_	12100	21000	ENT OF	AMAGES FOR	EXCD	P P P	000	3.462	760	.867	3.03	.095	• 020	9000	AVG ANN
			ONOMIC	FREG	000.9	5,500	200	2,500	1.500	006	007	. 500 500 500 500 500 500 500 500 500 500	200	.150	*100	0.50	000	Acous.	000 DA			76	1139	202	4312	6699	10101	15177	20003	

TOTTE 1700, 5000, 149, 7000, 8300, 940 TOTTE 1700, 5000, 149, 7000, 8300, 940 TAK = - CATEGNRY DAMAGES TOTTE 173		1		à					
PERK CATEGORY DAMAGES 155. 0.00 156. 0.00 157. 0.00 158. 0.00 159. 0.00 150. 0	CAPACITY#	1700.	5000.	00	7000		W W 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	• •	
PECK = CATEGNRY DAMAGES 130. 0.00 0.00 0.00 380. 0.00 0.00 0.00 380. 0.00 0.00 0.00 380. 0.00 0.00 0.00 380. 0.00 380. 0					NIMUM DESI	N DAMAGE			
750. 200. 0.00 0.00 0.00 0.00 0.00 0.00 0	¥	CATE	AMAGE						
380. 380.	20	00.0	9.0	•					
740. 101 .08 1.73 200. 250 .253 .553 .849 520. 435 .253 .538 540. 62 40.8 1.73 540. 62 40.8 1.73 540. 62 40.8 1.73 540. 62 40.8 1.73 540. 62 6.10 540. 62 6.10 55	0	00.0		0					
200. 250. 35 2.53 5.44 2 2.53 5.45 5.45 5.40 0.00 0.00 0.00 0.00 0.00	~ ~	70.	00	•					
### 52.53	3200.	522	`	. 7					
75.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	* 020a	36	ស្ម	GC :					
140.	-	3 (v.	- 5	∿ ೦					
340. 669 5.01 13.11 540. 682 6.10 1100. 1.17 7.77 18.61 1000. 1.17 9.90 22.09 1000. 1.17 9.90 22.09 130. 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0		29.		9					
1100 1117 1510 1510 1510 1510 1510 1510	7340.	.	G,						
1100. 1117 9.90 22.09 1000. 1143 14.08 27.00 1000. 17.5 17.5 29.32 MAXIMUM DESIGN DANAGE 135. 0.00 0.00 0.00 220. 0.00 0.00 0.00 220. 0.00 0.00	00000	0 0 0 0 0 0	~ ~	ນ ແລ ລິດເ					
1143 14,08 27,00 0000 1,751 29,32 MAXIMUM DESIGN DANAGE 0150 0.00 0.00 0.00 280 0.00 0.00 0.00 280 0.00 0.00 0.00 280 0.00 0.00 0.00 280 0.00 0.00 0.00 280 0.00 0.00 0.00 281 0.00 0.00 281 0.00 0.00 281 0.00 0.00 282 0.00 0.00 282 0.00 0.00 283 0.00 0.00 284 0.00 0.00 284 0.00 0.00 285 0.00 0.00 286 0.00 0.00 286 0.00 0.00 286 0.00 0.00 287 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 0.00 288 0.00 28	2100		. C.	~					
PEAK = = CATEGORY DAMAGES 130. 130. 130. 130. 130. 130. 130. 130	5100		ីព	0 2					
PEAK = = CATEGORY DAMAGES 130. 0.00 0.00 380. 0.00 0.00 280. 0.00 0.00 280. 0.00 0.00 280. 0.00 0.00 800. 0.00 0.00 800. 0.00 0.00	3			U .		DAMAGE	UNCTION		
130. 0.00 0.00 0.00 0.00 0.00 0.00 0.00	~	CATE	AMAGE						
ATED SCCONDHIC DATA FOR STATION 1030 0.00 0.00 0.00 0.00 0.00 0.00 0.00	000		್ಕ	•					
ATEO SCEONDHIC DATA FOR STATION 1030 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0 6 1 8 2 6		ç	•					
ZEON. 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	- T								
ATED ECCNOMIC DATA FOR STATION 1030 0.00 0.00 0.00 0.00 0.00 0.00 0.00	00 C	•	0,0						
ATED SCCONDHIC DATA FOR STATION 1030 0.00 0.00 0.00 0.00 0.00 0.00 0.00	N C	•	<u>ء</u> د	•					
### 1990 0.00 0.00 0.00 0.00 0.00 0.00 0.00	10		•						
ATED SCONDMIC DATA FOR STATION 1030 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Ny or Anga	•	0,	•					
ATED ECCNOMIC DATA FOR STATION 1030 PLAN 2 1000 0000 0000 0000 0000 0000 0000 0	20 25	• •	20						
ATED ECONOMIC DATA FOR STATION 1030 PLAN 2 15 15 15 15 15 15 15 15 15 15 15 15 15	0 0 0 0	3 U	u.	•					
4750 5.04 12.29 47.98 16.86 47.98 16.86 10.30 0.000 0.000 0.000 0.1350 13.50 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 0.000 0.000 1740 0.000 1740 0.000 17	2100	10 10 10 10 10 10 10 10 10 10 10 10 10 1	-	• •					
ATED SCCNOHIC DATA FOR STATION 1030 PLAN E 1030. 1130. 0.000 0.00	1000	200.	°°.	o in					
PEAK SUM TYPE 1 TYPE 2 TYPE 11330, 0.000 0	ATED SCON	DMIC DATA	OR STATI	10					
1130. 11	T.	MUS.	YPE	TYPE	7 YP				
1380 1740	نده ن	00.0	9 5	00.0					
1740. 0.000	30	0.00		00.0					
5200. 0.000	7	00.0	្	00.0	.0				
5011. 0.000	10 C	0.00	90	00.0	e e				
5016. 1.619 .110 .424 1.8520. 3.519 .183 1.013 2.8520. 5.879 .273 1.013 2.8534. 8540. 11.318 .428 3.191 7.0000. 16.337 .608 4.710 11.810. 22.900 1.033 6.524 14.8520. 37.180 1.033 6.524 14.8520.	0	00.0	•	00.0					
5520. 5.519 .163 1.013 2.5540. 5.5879 .273 1.555 4.7540. 5.559 .348 3.191 7.5500. 16.337 .608 4.710 11.7510. 37.191 7.5500. 37	9:0	1.61		N.	=======================================				
4.5240. 9.359 3.423 2.493 6.8540. 11.318 4.248 3.193 6.8000. 16.337 6.08 4.710 11.710. 21.900 3.793 6.524 14.710 11.793 6.524 14.710 11.793 6.524 14.710 11.793 6.524 14.710 11.793 6.524 14.710 11.793 6.524 14.793	0 0	10 m	•~> f	- 1 C - 1	ณ์				
8540. 11.318 .428 3.191 7. 0000. 15.337 .608 4.710 11. 2100. 20.900 .793 6.524 14. 55100. 30.33 9.539 19.	340	0000	UM	- 6	ร้อ				
00000. 16.337 .608 4.710 11. 2100. 21.900 .793 6.524 14. 25100. 30.180 1.033 9.338 19.	540	11,31	. 	3,19					
2100. 21.900 .793 6.524 14. 25100. 30.180 1.033 9.536 19.	0000	16,33	O .	4.71					
	000	06.12	۲.	-0 (3 (
	0 0	200	ت ا	0.1	•				

																148	680	70	•							
													教育教育教育教育教育	ISTAGE IAUTO 0		129.	833.		\$	古文代表教育技术教育		ISTAGE TAUTO	L S T R		• • • • • • • • • • • • • • • • • • • •	
												9 a 5016.	***	INAME	TAPE	40.00				**		NA ME	I DVR	STORA •1•	6300°	
												DESIGN 6	有核型作业技术技术技术	JPRT	180 180 180 180	260	1150.	151		电电影电影电影		JPRT 0	a 0 a -	13K		5 4
												C • €		PUTATION JPLT	REAL			194,			ROUTING	JPLT	SAME A IOPT	× 000.0	3080	N 1, RTIO
				00.0	ಬ	1.79	1.46	99*	200	77.7	17,53	INUAL .	***	SUB-AREA RUNDFF COMPUTATION MP IECUN ITAPE. JPLT 0 0 0 2	D HYDROGRAPHS	213	343,	19.	.	****	HYDROGRAPH ROU	REACH ITAPE	PLANS HAVE SAME ROUTING DATA ES ISAME I	AHSKK 0.000	6100.	2030, PLAN
6 6 5				00.00	• 10	.71	•63	55.	0.	1.93	60.8	TOTAL ANNUAL		B-AREA R IECUN	GENERATED PLAN	800	•	13.			HYDRO	R BYPASS	ALL	LAG	20505	STATION
~ ~					·			- 0			0.	104.	# # #	SUE ICOMP	PREVIOUSLY	802	1340	. S.		**************************************		ICOMP 1	0 • 0 0 • 0	NSTOL	1020.	STA
PLAN			200	0	0	.11	80.	400	•	.27	1,32		我我也我会会会会会	1STAG 20	PREV	190	1270.	385	•	我我我我我我我我我		ISTAG ZO30	0000 0000 0	S d L S A		
0801			00.0	00.0	.35	2,61	2.17	70°1	•	6.63	26.95	CAP COST				6. 178.	1150.	4 0 0 11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	• 0			POTENTIAL LEVEE ISTAG 2030	\$ \$ 0 ° 0		N O	
PRUB	200	400	.776	570.1	.785	. 391	136	200	•	DMG	8#1	LOCAL PROTECTION CAP	发展			165.			•01	· 我们在我们的 · 我们们 · 我们们们 · 我们们们们们们们们					00	
EXCD	000	400	160	769	867	.323	000			AVG ANN	AVG ANN	LOCAL P.				9	Č i	Λ ·							STORAGES	
000								20504																	810 TUO	

Several pages of printout deleted

D0 4 * • • • • • • • • • • • • • • • • • •	A A O O O O O O O O O O O O O O O O O O	
TOTAL VOLUME 3051998 86428 13848 342841 311288	10N ADSCN1 0.00000	
72=HOUR 50 H 4 144 13 • 48 342 • 41 342 • 41 31128 •	SSOS. E COMPUTATION I LAGST 0 0 0	
24 e H G U R H B L B L B L B R B R B B B B B B B B B B	и О О ФАМАС О © О Ф О О	
6*HUUR 19364. 548. 548. 130.35 9607.	MAXIMUM STORAGE EXPECTED ANNUAL FLUD NDMG ISAME TRGT 1 0	
00 00 00 00 00 00 00 00 00 00 00 00 00	EXPECTE NA	0
000XFX UUUX UUUX UUU VU VU VU	NFL.00	F SOUNDS FORM COM COT CO
THOUS	1.05 2.03 4.03 3.0	STATION 2080 0.000 0.000 0.000 1.000 11.000 13.000 13.000 13.000 22.300 23.3
		T

	• • • • • • • • • • • • • • • • • • • •																																													
	00																																													
		Z										•				ζ																														
08CNT	9300; 340;	FUNCTION													1	DAMAGE FUNCTION																														
N 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	 O & K N	DAMAGE FI														± ⊕ •																														
LOCAL PROTECTION DATA XLPMX XLPMN XANCST XDSCNT 5500. 170002300 .05040	80 20 20 20 20 20 20 20 20 20 20 20 20 20																																													
	7000	MINIMUM DESIGN														MAXIMUM DESIGN														PLAN																THIS DATA
XLP 630	5500.	Z Z														₩ W														2030																2
			0													0	2													TATION	Y BE	00000	000.0	000		000	0.000	2,275	3,000	000	000	000	54.500	14,300	50.100	Σ × C
	5000		13 A C A C C														0 M S M S M S M S M S M S M S M S M S M													0.00																
	 O Ni		X D D													2 0	CA LEGURA													2 4 4 0	SUM	000.0	00000	0000	00000	000	0.000	12,275	006 5	007.01	300	100	34.500	14.300	50,100	
	1700.		000	00.0	07.	5,00	7.20	6	7.00	16.40	20.30	23.10	က ရ (၁၀) (၁၀)	30 m	000	F 4 1 2	4 S	000	9	0 7° 6	000	0 0	11.80	3.40	20.30	23.10	28.00	200	50.10	J NOR	•															i.
	8 B 2 m		e 3														8 E											•				1030	1130	1380	1740	* 000	1000	4985	5620	0879	4340	2000	12100	15100	21000	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	CAPACITY®		PEAK	1130	740	280	200	220.	0000	6.080	7340.	8540.	.0000	2100.	0000		4 .	1030	1380	1740	0822	5200°	4800	5620	7070	8540	0000	001	21000		1															3

1000 DAMAGES FOR STATION 2030 PLAN 2 10. FLOW FREG 1707 2 1139, 5.462 1.752 0.00 0.00 2 1239, 5.462 1.752 0.00 0.00 4 2421, 1776 0.00 0.00 5 4312, 867 278 2.13 2.13 6 5699, 323 391 6.54 7 10191, 0.095 1.36 2.13 6 5699, 323 391 6.54 8 15177, 0.00 0.037 1.50 1.50 8 15177, 0.00 0.037 1.50 1.50 8 20003, 0.04 14.52 14.52
--

Several pages of printout deleted

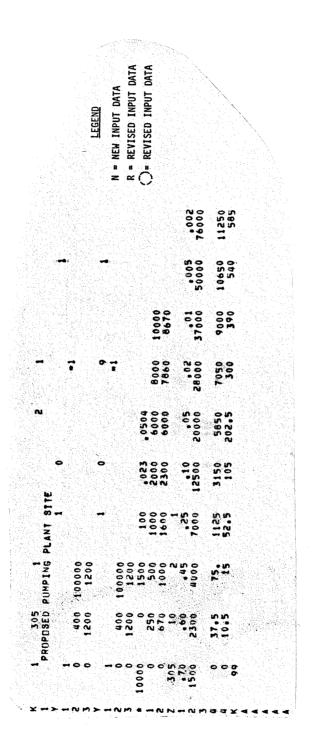
EXHIBIT 7

SIZING RESERVOIR, PUMPING PLANT, DIVERSION AND UNIFORM PROTECTION LOCAL PROJECTS

(Unconstrained)

												TEGEND	N = NEW INDIT DATA		R = REVISED INPUT DATA	()= REVISED INPUT DATA																				
				600	3000	2720	580 580							00005	7200					(10 p	<u>ر</u> .	6480		•		~ •7	11.0				4880	2	298		80°
TOTAL	4.0			- 15 5	1920	3330	.ρο •	3.5						00017	0004			-			4		5620		٠		O• 7	0				56.20		.53		3,53
	3,25			17.5	1290	3980	670	25					0204	12500	5650								4800		ب		٠, ۳	7.8				4800	•	.43		2.73
	2°50 2°50	-		200	1040	4600	0 0 0 0	2	_			7	E 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	11000	0503	-			6300	24000	۰	•	4220				o. N	15.0				4220	>	• 36	:	2,53
	1,50			88	0.6	5100	775	3 (æ		-		0.00	000	6350		5		3080	10250		0.0	3200	21000	•	∞	~ - ~ -	4.7	30.2		005	3000	21000	Ş	٠ • •	. 7 . 7
	00			50	078	5370	\$ t.	ŝ						1000	3600		TION REACH		2135	6100		N 0	2280	15100	•	<u>.</u>	 	N	27.8	•	0 % 0 % 0 %	288	15100	₹.	9 t	, a c
	0.70	11 m 20 1	M INFLOW	3	000	5360	252	3.			; ;		975.0	1030	3000		WUDIFICATION		076	2050	> 15 	.0.	1740	12100	~ '	v :	.0.3	ند. -	23.0	9020	2000	1 7 4 0	12100		1.1	00.0
	0.50		RESERVOIR	- 92 - 7	760	5080	1240	35		KESEKVOIK			0007	5101	5400			*	475	1020	• v.	10	1380	10000	₹.		n c 0	0.1	19.0		007	1380	10000	0:	•	7.70
•	0.30	0	FUIEN-IAL	₹.	710	0007	160	8		MUTUACO X			2500	1000	1500	1030	1.0		50	00 7		• 15	1130	0758	~ (9.9	•	9:5	1000) () () () () () () () () () (1130	0758	o (u c	6.16
> .0 .0	- 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	•	; •	ž	099	3450	2. 5. 5. 7.	07		E L		-	0000	965	0		?		•	0 2 0	3.0	. 25	1030	7.540	00	•	N. EG	•	7.5	1700	27	1030	7340	0 9	•	
o ++ -	, - N	3 ¥ .	- 1	z	z :	z z	· z	Z	×.	- >	- >	(, -	. A	M	¥ •	- >		N:	5	, !	-	n (∾ ⊬	· -17 -2	, <	: =3	7	3 '	-	۰ ۸۰	м	M	J <	. 9	. 3

					X.									LEGEND	N = NFW INPILE DATA													選号(2)を	Andrew Control of the												
	•	•		•			240	2720	280	~ t	<u>^</u>										(e la		0879		10.4				0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	16.4		70.7			20.	1000	006	 O	3 0	
	•	•		•		 1	S. S.	1760	365	91							8300		•				•	5620		13,9				2020	13.9		13.4			1.06	939	1110	120	<u>.</u>	•
:	•	•	•	-			375	1240	470	50 I	V		•				7500							4800		11.0				0087	11.8		æ. ==			36.	1 0 2 5 3 5	1330	153	æ (•
	•	•	•	•			061	1040	20 9	9	. -			•			9019				24000	٥	•	4220		e. 6				0226	60 O		æ.				350	1530	200	۵: د	•
26.32	0	66°	7.98	٥,	92.01		85	⊖ ç • •	24.	9	2 N	4810N	eles V				5200			3080	10250		n w • •	3500	21000	2.		0300	340	3200	2 N	50.1	~; ``	0		•	105	1690	522	22	2
27.00	•	79.	20.5	•	12,29		50	940)	7,		E DIVE	•	•		0200	2000		3	2. (5	0019	i f	0 0 V	2230	15100		E	8300	283	2280	5.00 5.00	6,44	S.	Ç.77	ğ		- £	1810	330	92.	3
00.	•	N) (3.18	•	7.15		33	000	0000		2	¥CC	•			• 015	3400	ONE OUVUN	5	C 22 0	2020	• t	n # 0	1740	12100	้	34.5	2000	22.5	1740	2.4	34,5	ವ) സ	34.5	TO FOREBAY POOL		- 54.	1800	415	n)	=
, , , , , , , , , , , , , , , , , , , 		ۍ د د	1.75	0	3,50	35.1	92	760		120	32	RVDIR TO				1500	200 200 200 200 200 200 200 200 200 200			475	1020		î :	1380	10000	•	9.6 9.6 9.6	5500	67.	1380	1.6	28.0	1.6	~	Š	0.0	אלג	1650	515	7	7
, c.) 0 } !	70.	- % - %	•	3 0	> u	2	710	000	160	30 C	*			2000	•	1550	2030	3	ď	00 ≥	<u>.</u>	u i	1.00	6540	•	23.1	2000	103	1130	97 C	23.1	0	S	UCAL INFI		* 5 `	1540	615	25	8,
) ; ;	 •	٥,	- 0		۰,	> •	72	660	3450	512	ş-	. 3				20000	00	-			•	2030	٠,	030	7340	0	20.2	1700	42	1030	7340	20.3	0	20°3		÷:	± 6	320	730	~	-



				7	FLW DEV	19 0 FTM(NC)	FLW DEV	FLW DEV	16 0 FTN(NC)	FLW DEV	FLM DEV	16 0 FTM (MC)	
		0		FL* 085	FL* UBJ		FLM UBJ	FL# 083		FLW 08J	FL ~ DBJ		
	4.40	\$.		TRG FLUM 0.000	TRG FLOW	08J DEV 1A	TAG FLUW 0.000	186 FLUW 0.000	UBJ DEV 1A	186 FLDW 0.000	TRG FLUW 0.000	08J DEV TA	
IPLT IPHT NSTA	FОЯМЕD 1 50 2.20 3.25	01V 7 -500s	0000 • 0	INT FLOW 6015,571	INT FLOW 7808,356	VAR(M) VAR(M1)	INT FLOM 6054.577	INT FLOW 7806,350	VAR(M) VAR(M1) 596E+04 .396E+04	INT FLOW 6099.605	INT FEUN 7808,356	VAR(M) VAH(M1)	*1067E+04
SPECT THR NWT	4 ANALYSES TO BE PER 4= 2 NRTIUM 9 RTIOM 0 1600 16		FIXED COST INPU	181A 1030	ISTA 2030	W W JN	181A 1050	1STA 2050	NO NO	181A 1630	151A 2030	E -	.1066E+04
I WIMA WHE WOLLD	MULTI-PLAN NPLAN • 25	VAR 3											.1065E+04
	#SOLLO	VAR 1 VAR 2 = 200.											OBJECTIVE FUNCTION FOR VARIABLE 1
	JUB SPECIFICATION 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	JUB SPECTFICATION 50 0 0 0 0 0 0 3 0 0 0 3 0 0 0 0 0 0 0 0	NO NHR NMIN IDAY THR IMIN IETE IPLT IPRT NSTAN O O O O O O O O O	JUB SPECIFICATION 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0	JUB SPECIFICATION JUDEA THR JAIN WERE IPLI IPRI NSTAN O 0 0 0 0 0 0 3 0 0 JUDEA NOT LREPT THACE MULTI-PLAN ANALYSES TO BE PERFORMED MULTI-PLAN ANALYSES TO BE PERFORMED MULTI-PLAN ANALYSES TO BE PERFORMED NPLANZ NATIONS 1 1.50 Z.20 3.25 4.40 1.50 J. O 1.50 J.	HIGH WHEN WATH 19AY THE JAIN METRE 1PLT 1PHT MSTAN 60 1 0 0 3 0 0 3 200 8 2 0 JUDER NOT LRIPT THACE 60 0 3 0 0 JUDER NOT LRIPT THACE 60 0 3 0 0 8 200 8 2 0 0 0 8 200 8 2 2 0 0 0 0 8 200 8 2 2 0 0 0 8 200 0 0 0 0 0 0 1 5 3 0 0 0 1 5 3 0 0 0 1 5 3 0 0 0 1 5 3 0 0 0 1 5 4 4 0 1 5 5 0 0 0 0 1 5 5 0 0 0 1 5 5 0 0 0 1 5 5 0 0 1 5 0 0 1	JUB SPECIFICATION JUB SPECIFICATION SPECIFICATION	JUH SPECIFICATION 100 100 100 100 100 100 100 1	JUB SPECIFICATION JUB SPECIFICATION DO D D D D D D D D	HULTI-PLAN ANALYSES 11) BE PERFURNED ***AUR 2 VAR 4 VAR 5 THE THAUT FLOW ***AUR 2 VAR 5 VAR 4 VAR 5 THE THOUT FEAR ***AUR 3 VAR 4 VAR 5 THE THOUT FAN ***AUR 4 VAR 5 THE THOUT FAN ***AUR 5 VAR 6 VAR 5 THE THOUT FAN ***AUR 6 VAR 7 THE THOUT FAN ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLANDER ***AUR 7 THE FLOW FLOW FLOW FLOW FLOW FLOW FLOW FLOW	10 SPECIFICATION 1 SPECIFICATION 1	MULTI-PLAN ANALYSES 10 BE PERFURNED Nature 1PLT 11ACF Nature 1ACF Nature 1ACF	### WHE WAIN 1947 THE JANN HENCE 1PLT IPHT NSTAN JUDE

		18TA 1030	0 4615.376	TRG FLUW	FLW CBJ	FLW DEV
		ISTA 2030	A INT FLOM 7808.356	TRG FLOW	FLE 080	FLW DEV
4000.00 TO	5190	EN OT	1 .200E+03 .519E+04	000 000	1ANCOT 548,657	0 FIN(NC)
		18TA 18TA 1030	A INT FLOW 0 4646,689	TRG FLUW 0,000	FLW 083	FLW DEV
		100 100 100 100 100 100 100 100 100 100	1NT FLOR	TRG FLOW 0.000	FLW 08J	FLW DEV
		¥ N	1 VAR(M) VAR(M1) 1 198E+03 519E+04	083 DEV 0,000	TANCST ANDMG 500,340 548,643	0 FTN(NC)
		1914	1NT FLOW 0 4678-617	TRG FLOW 0.000	FLW 085	FLW DEV
		ISTA 2030	A 127 FLOX 7871-148	TRG FLUW	FLW 083	FL* DEV
		E NI	1 .196E+03 .519E+04	08J DEV 0,000	SOO.491 548.624	0 FTN(NC)
OBJECTIVE FUNCTION FOR WARIABLE 2	.1049E+04	.1049E+04	.1049E+04			
		18TA 1030	A 1NT FLOX	TRG FLUW 0.000	FLM 083	000°0
		1 ST A 2 0 3 0	A 1NT FLOW 0 7834,109	TRG FLOW 0.000	FLM CBJ.	FLW DEV
200°00 TO	198,36	Z C	1 VAR(M) VAR(M1) 2 .500E+03 .198E+03	084 DEV	TANCST ANDMG SOO.313 S40.647	0 FINCAC)
		18TA 1030	1 1NT FLOW	TRG FLOW 0.000	FLW 083	FLW DEV
		18TA 2030	A INT FLOW	TRG FLOW	FLW 085	FLW DEV
		E L	1 VARCH) VARCH13	08J DEV	TANCST ANDMG	O FINCHC)
		191A 1030	1NT FLOW	TRG FLOW	00000	FLW DEV
		19TA 2030	1NT FLO# 7645,800	TRG FLOW 0.000	FL* 084	FL# DEV
		E C	2 490E+03 198E+03	08J DEV 0.000	TANCST ANDMG	O FTN(NC)
OBJECTIVE FUNCTION FOR VARIABLE 7	.1049E+04	.1049E+04	•1049E+04			

			1030 1030	INT FLOW 4641.270	TRG FLUW 0.000	FLW UBJ	F 0000
			2030	7578 - 270 F COM	TRG FLOW	200°0	FLW DEV
VAR 7 ADJ FROM	500,00 TD	750,00	T CON	.100E+04 .750E+03	000 000	TANCST ANDMG 517.659 527.738	ີ
			4 0 - m - m - m	1NT FLOX 4641.270	TRG FLOW	FL** 084	>000 200 300 400 400 400
			18 T 8 T 8 T 8 T 8 T 8 T 8 T 8 T 8 T 8 T	INT FLOW 7578.270	TRG FLOW 0,000	FLW 083	FLW DEV
			- X - X - X - X - X - X - X - X - X - X	.990E+03 .750E+03	08J DEV 0.000	TANCST ANDMG 516,779 528,959	O FTN(NC)
			18TA 1030	INT FLOW 4641,270	TRG FLOW	700°0 *13	FLW 0EV
			181A 2030	1NT FLOW 7578.270	TRG FLOW		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
			W W W	.980E+03 .750E+03	083 DEV 0,000	TANCST ANDMG 515,698 530,182	O FINENCY
OBJECTIVE FUNCTION	FUNCTION FOR VARIABLE 9	.10458+04	.1046E+04	•1046E+04			
			18TA 1030	INT FLOW 4641.270	TRG FLOW	FLW OBJ	FLW DEV
			18TA 2030	INT FLOW 7578,270	TRG FLOW	7000°	FLW 06.
VAR 9 ADJ FROM	1000,00 TD	1500,00	6	.519E+04 .150E+04	UBJ DEV 0.000	TANCOT ANDMG	. 102E+04
			1817	INT FLOX	TRO FLOW	780 %	FLW DEV
			191A 2030	INT FLOW 7578,270	TRG FLOW 0.000	**************************************	FLW 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
			NC 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.514E+04 .150E+04	053 DEV 0,000	TANCST ANDMG 541.629 476.321	O FINENCY 102E+04
			181A 1030	INT FLOW 4758,866	TRG FLOW	FL* 083	FLW DEV
			18TA 2030	INT FLOW 7578,270	TRG FLOW 0.000	FLW 085	FLW DEV
			NC NC NC	.509E+04 .150E+04	08J DEV	SA9.912 478.401	D FINCED
OBJECTIVE FUNCTION FOR VARIABLE	OR VARIABLE 1	,1018E+04	.10186+04	•1018E+04			

FL* DEV	FLW DEV	# TN(NC)	FLW DEV	>0°0°0	. 101E+04	FLM DEV	FLE 0000	1 FTN(NC)		FLW DEV	FLW DEV 0.000	0 FINCHC)	PLW DEV	FLW DEV	FINCNC)	FLW DEV	FL 000 0	FTN(NC)	FLH DEV	FLW DEV 0.000
FL™ 080.	FL* 08.0	504.745 401.783	000°0 80 #14	FLW 083	TANCST ANDMG O	PLW 085	F.L.W. OB.J.	TANCST ANDMG 0		0000 0000	000.0	TANCST ANDMG 0	780 874 874	F. E. C.	TANCST ANDMG C	FLM 08J	000°0	TANCST ANDRE D	FLW DBC	FLW 085
TRG FLOW	786 FLOW 0.000	08J DEV	TRG FLOW	TRG FLOW 0,000	083 DEV	TRG FLOW 0.000	TRG FLUW 0.000	083 DEV		TRG FLUM 0.000	TRG FLUW	08J DEV	TRG FLUW 0.000	TRG FLO™ 0.000	08J DEV	TRG FLOW	TRG FLUW	08J DEV 0,000	*RG FLOW 0.000	TRG FLOW
1NT FLOW 2576,749	INT FLOW 7578.270	VAR(M) VAR(M1) -198E+03 -779E+04	INT. FLOW 2599,856	INT FLOW 7609,217	.196E+03 .779E+04	INT FLOW 2621,135	INT FLOW 7640,290	*194E+03 .779E+04	.1007E+04	1NT FLOW 2566,451	1NT FLOW 7550-181	.750E+03 .200E+03	INT FLOW 2575,053	INT FLOW 7572,839	.750E+03 .199E+03	INT FLOW 2577.640	INT FLOW 7576.641	.750E+03 .198E+03	INT FLOW 2570,749	INT FLOW 7578,270
181A 1030	181A 2030	∓ ×∾	181A 1030	1STA 2030	Ξ- Σ-λ	181A 1030	181A 2030	E E	<u> </u>	187A 1030	181A 2030	E 7	18TA 1030	181A 2030	π. Ε ν	18TA 1030	181A 2030	 E M	181A 1030	187A 2030
		Ž-			2			ğn.	4007E+0			<u>0</u> -			2-			N -		
		7785,49							.1007E+04											
		5190,33 10							FOR VARIABLE 2											
		1 ADJ FROM							OBJECTIVE FUNCTION FOR VARIABLE											
		VAR							OBJEC											

			750E+03		7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	604.746	401.783	TINCNC)
			STA 030	INT FLOW 2578.749	TRG FLOW 0.000	000°0	70 80	FLW DEV
		Ä	197A 2030	INT FLOW 7585,949	TRG FLUW 0.000	FLW 000.	70	FLW DEV
		NO NO	AL VARCAS	VAR(M1)	000.0 0.000	1ANGST	ANDMG 0	*101E+04
			STA 030	INT FLOW 2578,749	TRG FLOW	# 000°	700	FLW DEV
		īā	91A IN	INT FLOW 7593.627	TRG FLOW	FLW DBJ	70	FLW DEV
		E ~	M1 VAR(M)	3 VARCH1)	08J DEV 0.000	TANCST 603.703	402.920	. 101E+04
OBJECTIVE FUNCTION FOR VARIABLE 7	.1007E+04	F007E+04	,1007E+04	70				
			010 010 NH	INT FLOW 2578,749	TRG FLOW 0.000	FLW 08J	760	FLW DEV
		Ä	181A 2030	1NT FLOW 7531.575	TRG FLOW 0,000	FLW 084	70	FLW DEV 0.000
VAR 7 ADJ FRUM 750.00 TD	795,68	2 -	M1 VARCM) 7 .150E+04	VAR(M1)	08J DEV 0.000	TANCST 607.922	398.339	. 101E+04
		-	181A 1030	INT FLOW 2578,749	TRG FLOW	7000 W.J.	70	FLW DEV
			STA IN	INT FLOW 7531,575	186 FLOW	FL# 08J	70 80	FLW DEV
		Z N	M MI VAR(M)	. VAR(M1)	083 DEV 0.000	4ANCST 607.151	399.764	. FTNCNC)
			STA 030	INT FLOW 2578,749	7RG FLOW 0.000	FLW CB.	70	FLW DEV
			91A IN	INT FLOW 7531,575	TRG FLOW	780 MTL		FLW DEV
		E O	M1 VARCH) 7 .147E+04) VAR(M1)	085 DEV 0.000	TANCST 606.381	ANDMG 0	. 101E+04
	70727001		C + 13 D C C +					

		1030	2578,749	TRG FLUM 0,000	FL# 085	PLN OOO
		ISTA 2030	INT FLOW 7531,575	TRG FLOW 0.000	000°0	FLW DEV 0.000
1500,00 TO	NC 1 1 2250,00		.779E+04 .225E+04	08J DEV	TANCST ANDHG 650,586 336,824	0 FTN(NC)
		18TA 1030	INT FLOW 2606,145	TRG FLOM 0.000	000°0	FLW DEV
		1STA 2030	1NT FLOM 7531,875	TRG FLOW 0.000	000°0	FLW DEV
	CN Z	O E 	.771E+04 .225E+04	08J DEV 0.000	TANCST ANDMG 648,803 338,191	0 FIN(NC)
		151A 1030	1NT FLOW 2631,587	7RG FLUW 0.000	FLW 08.	FL# DEV
		191A 2030	INT FLOX 7531.575	TRG FLOW 0,000	760°0	FLW DEV
	S. P.	Ξ O Σ T	.763E+04 .225E+04	08J DEV 0.000	TANCST ANDMG	987E+03
OBJECTIVE FUNCTION FOR VARIABLE 1	.9874E+03 .9870E+	+03	.9866E+03			
		181A 1030	INT FLOW 4641.267	7RG FLOW 0,000	FLW 08J	FLE DEV
		ISTA 2030	INT FLOW 7531-575	TRG FLOW 0.000	.000°0	FLW DEV 0.000
		E NI	.198E+03 .519E+04	08J DEV 0,000	TANCST ANDMG	FINING)
		181A 1030	ENT FLOW 266 266	TRG FLOW 0.000	FL# 08J	FL# 0EV
		1STA 2030	INT FLOW 7531.575	TRG FLOW 0.000	1000°0	FL* DEV
7785.49 10	NC NC 1	Σ N	.198E+03 .701E+04	08J DEV	632,730 350,530	983E+03
		197A 1030	1NT FLOX 2874,189	TRG FLOW	000°0	FLW DEV
		1STA 2030	1NT FLOW 7562,481	TRG FLOW	FLW 084	FLW DEV 0.000
	2 A 2	Σ Σ N	.196E+03 .731E+04	083 DEV 0+000	TANCST ANDMG 632.874 350.434	. PTN(NC)
		1STA 1030	INT FLOW 2901.670	TRG FLOW	FLW OBJ	FL* 000

OBJECTIVE FUNCTION FOR VARIABLE 2 .9833E+03	N.	Σ		083 054		
•	•	17.00	.194E+03 .701E+04	000*0	633.018 350.417	O FININGS
	.9833E+0	.	9-9834E+03			
		187A 1030	INT FLOW 2844,594	TRG FLOW	FLM 080	FLW DEV
		197A 2030	INT FLOW 7528,872	TRG FLOW 0,000	000°0	>000 300 000 000 000 000 000 000 000 000
	Ç.	₩ M W M	.796E+03 .199E+03	083 DEV 0,000	TANCST ANDMG 632.718 350.602	0 FTN(NC)
		157A 1630	INT FLOW 2846,256	TRG FLOW 0.000	780°0	FL & DE V
		181A 2030	INT FLOW 7530,764	TRG FLDW 0.000	FLW 083	FLW DEV
	<u>v</u> –	7 H H.	VAR(M) VAR(M1) *796E+03 .198E+03	081 DEV	TANCST ANDMG 632,726 350,553	983E+03
		187A 1030	INT FLOW 2846,754	TRG FLOW	000°0	FLX DEV
		181A 2030	INT FLOW 7531,8332	TRG FLOW 0.000	FLW 083	FL* DEV
	Š	7 X	.796E+03 .198E+03	08J DEV	TANCST ANDMG 632,729 350,537	983E+03
		1STA 1030	INT FLOW 2846.968	TRG FLUW 0.000	7000° M14	FLW DEV 0.000
		18TA 2030	INT FLOW 7531,575	TRG FLUW	000°0	F C . O . O . O . O . O . O . O . O . O .
	9	7 H	.796E+03 .198E+03	083 DEV	TANCST ANDMG 632,730 350,530	983E+03
		181A 1030	INT FLOW 2846.968	TRG FLOW 0,000	000°0	FLW DEV
		191A 2030	1N7 FLOW 7539,649	TRG FLOW 0.000	FLW DBJ	FLW DEV
	S N	₩. E.	.788E+03 .198E+03	08J DEV	TANCST ANDMG 632,176 351,059	983E+03
		181A 1030	INT FLOW 2846,966	TRG FLOW	000°0	FLW DEV
		1514 2030	INT FLOW 7547,796	TRG FLOW 0.000	FLW 065	FLW DEV 0.000
	25	7 X	.760E+03 .198E+03	083 DEV	TANCST ANDMG 631.623 351.596	983E+03
OBJECTIVE FUNCTION FOR VARIABLE 7 .9833E+0	+03 .9832E+03		.9832E+03			

)
.98336+

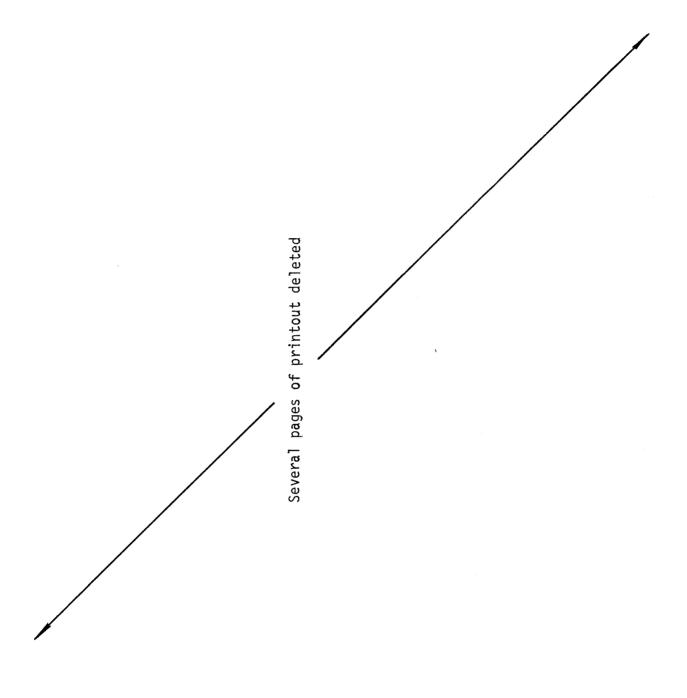
		030 INT FLOW 030 2871,174	TRG FLOW	000°0	FL 0 000.
	15TA 2030	A INT FLOW 0 7558,355	TRG FLOW	F.L. CBJ	FLW DEV
	T-	H1 VAR(M) VAR(M1) 9 .694E+04 .255E+04	08J DEV 0.000	TANCST ANDHG 636.174 346.555	. 983E+03
	157A 1030	# INT FLOX	TRG FLOW	700°0 80°0	FLW DEV
	1STA 2030	A INT FLOW 0 7558,355	TRG FLOW	780 °0 0 °0	FLW DEV
	E	M1 VAR(M) VAR(M1) 9 .687E+04 .235E+04	08J DEV	TANCST ANDMG 634,567 347,815	982E+03
OBJECTIVE FUNCTION FOR VARIABLE 1 9831E+03	.9827E+03	.9624E+03			
	191A 1030	A INT FLOW 0 4836.753	TRG FLOW	CBD. 0.00.0	FLW DEV
	1878	A INT FLOW 7558,355	TRG FLOW 0,000	000°0	FLW DEV
	EN C	1 VAR(M) VAR(M1)	08.3 DEV 0.000	TANCST ANDMG 588.787 407.956	0 FTN(NC)
	19TA 1030	A INT FLOW 0 3177,182	TRG FLOW 0.000	7000.0 M. 14	FLW DEV
	LSTA ROSO SOSO	A 1NT FLOW 0 7558,355	TRG FLOW 0.000	000°0	FLW DEV
VAR 1 ADJ FROM 7006.94 TO 6412,47	EN	M1 VARCM) VARCM1) 1 .198E+03 .641E+04	083 DEV	TANCST ANDMG	0 FIN(NC)
	18TA 1030	A INT FLOW 0 3208,106	TRG FLUW 0,000	780 M J J	FLW DEV
	15TA 2030	A INT FLOW 0 7589,284	TRG FLUW 0.000	FL* 080.	FLW DEV
	E NO Z	1 .196E+03 .641E+04	083 DEV 0.000	TANCST ANDMG 623,598 358,206	O FINCHC)
	101 1030	1NT FLOX 3239,330	TRG FLOW 0.000	FL# 000.	FLW DEW
	1STA 2030	A INT FLOW 0 7620.339	TRG FLUW	FLW CB.	FLW DEV
	EN EN	1 .194E+03 .641E+04	081 050	TANCST ANDMG 623.748 358.187	O FINCED
OBJECTIVE FUNCTION FOR VARIABLE 2 .9817E+03	.9818E+03	.9819E+03			

FL# DEV	FLW DEV	FTNCNC)	FLW DEV	FLW DEV 0.000	FTN(NC) 982E+03	FL # DEV	FL 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	FTN(NC)	FLW DEV	F. 5000	FTN(NC) 982E+03	FL	FLW DEV	FTN(NC)	FLH 0.00 V	FLW DEV	O FTN(NC)
780 .000	FL# 080.	ANDHO 0	000°0	7.000°	ANDMG 0	000°0	FLW 08J	1 ANDMG 0	FLW 08J	FLW 083	358,295	000°0	FLW 080.0	ASS. SZI	FLW 083	FLW 084	ASO. MO
		1ANC8			TANCST 623.433	ia.		TANCST 623.445			TANCST 623,450	t i		TANCST 622.915		•	TANCST 622,380
786 FLOW	TRG FLOW 0.000	08J DEV	TRG FLDW	186 FLOW 0.000	083 DEV	TRG FLOW	TRG FLUW 0.000	083 DEV	TRG FLOW 0.000	TRG FLOW 0.000	08J DEV 0,000	TRG FLDW 0,000	TRG FLOW	083 DEV	TRG FLDW	TRG FLUW	08J DEV
33.8 33.8 33.8 33.8 33.8 33.8 33.8 33.8	# 20 X	VAR(M1)	L U W 623	LOW 784	VARCH1)	FLOW 6.114	₩01 78%	VAR(M1)		FLOW 8.355	VAR(M1)	N N N N N N N N N N N N N N N N N N N	10 M	VAR(M1)	30 E	FLOW ,112	VAR(M1)
INT FLON 3165.333	INT FLON 7546,458	VAR(M)	INT FLOW 3173.623	INT FLOW 7554.784	VAR(M)	INT FLO 3176.11	INT FLOW 7557,284	VAR(M)	1NT FLOW 3177.182	INT F 7558.	.769E+03	3177.	INT FLOW 7566,234	. 762E+03	INT FLOW 3177.182	INT F 7574.	VAR(M)
19TA 1030	19TA 2030	E ~	181A 1030	1STA 2030	E N	187A 1030	ISTA 2030	-N E E⊩	181A 1030	181A 2030	IN In	187A 1030	151A 2030	1 R 1	187A 1030	181A 2030	 ₹ ~ ~
		0 -	78 (N		2-		^	ğ-			NC NC			¥**			S Z
						0											

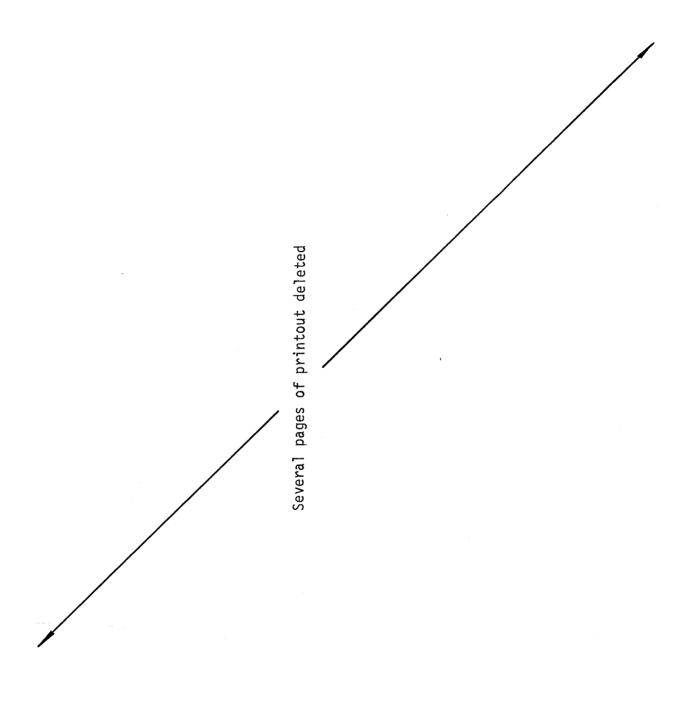
				181A 1030	INT FLOW 3177-182	TRG FLOW	FLM 083	FLW DEV
				181A 2030	INT FLOW 7660,243	TRG FLOW	11. 1000.00.00.00.00.00.00.00.00.00.00.00.00	FL₩ DEV 0.000
VAR 7 ADJ FROM	769.45 70	26.699	2-	Tr Eo	VAR(M) VAR(M1) 2355+04 .6705+03	08J DEV	1ANCST ANDMG 616,535 364,679	0 FTN(NC)
				187A 1030	INT FLOW 3177,182	TRG FLOW	FLW 08J	FL# DEV
				151A 2030	INT FLOW 7660,243	TRG FLOW	780°0 6.00°0	FLW DEV
			S.W	EO	.233E+04 .670E+03	083 DEV 0,000	TANCST ANDMG 614,938 366,326	981E+03
				187A 1030	1NT FLOW 3177,182	486 FLO¥ 0,000	000°0	PLW DEV
				187A 2030	INT FLOW 7660,243	TRG FLOW 0,000	7000	FLM DEV
			Z.	TO	.230E+04 .670E+03	08J DEV	TANCST ANOMG	. 981E+03
OBJECTIVE FUNCTION FOR VARIABLE	FOR VARIABLE 9	.9812E+03	.9813E+03		.9613E+03			
				181A 1030	INT FLOW 3177,182	TRG FLOW 0.000	7000°0	FLW DEV
				191A 2030	INT FLOW 7660,243	TRG FLOW 0.000	000°0	FLW DEV
			NC T	I.O E	VAR(M) VAR(M1)	08J DEV 0,000	TANCST ANDES	0 FTN(NC)
				1STA 1030	1NT FLOW 3177-182	TRG FLOW	7000	FLW DEV
				181A 2030	INT FLOW 7660,243	TRG FLOW 0.000	FLW 08J	FLW DEV
			2-	To E →	.641E+04 .270E+04	08J DEV	ALOLOST ANDRG	982E+03
				181A 1030	1NT FLOW 3177-182	TRG FLOW	000°0	FLW DEV
				151A 2030	INT FLOW 7660,243	TRG FLOW	780 474	FLW DEV
A P O A O M O M O M O M O M O M O M O M O M	2351.25	2457.06	- N	o E	.641E+04 .246E+04	OBJ DEV	TANCST ANDMG 623,719 357,326	PTN(NC)

191A INT FLOW TRG FLOW FLW DEV 1030 31777182 0.000	1974 INT FLOM TRG FLOM FLW OBJ FLW DEV 2030 7660.243 0.000 0.000	NC M M1 . VAR(M1) UBJ DEV TANGST ANDHG D FTN(NC) 1 1 1 1 .641E+04 .641E+04 0.000 623.719 357.326 .981E+03	197A 1N1 FLOW TRG FLOW FLW DBJ FLW DEV 0,000 0,000 0,000	191A INT FLOW TRG FLOW FLW DBJ FLW DEV 2030 7660.243 0.000 0.000	NC M H1 VAR(M) VAR(M1) DBJ DEV TANCST ANDMG D FTN(NC) 2 1 1 .635E+04 .635E+04 0.000 622,164 359,276 .961E+03	ISTA INT FLOW TRG FLOW FLW OBJ FLW DEV 0.000 0.000 0.000	18TA INT FLOW TRG FLOW FLW OBJ FLW DEV 2030 0.000	NC M MI VAR(M) VAR(M1) OBJ DEV TANGST ANDHG OF FIN(NC) 3 1 1 .628E+04 .628E+04 0.000 620,651 361,229 .982E+03	OBJECTIVE FUNCTION FOR VARIABLE 1 .9810E+03 .9815E+03 .9819E+03	ISTA INT FLOW TRG.FLOW FLW DEV 1030 1030 1030 0.000	187A 1NT FLOM TRG FLOM FLW DBJ FLW DEV 2000 0.000 0.000	NC M MI VAR(M) VAR(M1) OBJ DEV TANGST ANDMG O FIN(NC) 1 2 1 .1986+03 .9628+04 0.000 693,019 299.560 .9938+03	ISTA INT FLOW TRG FLOW FLW DBJ FLW DEV 2719-713 0.000 0.000 0.000	19TA INT FLOW TRG FLOW FLW DBJ FLW DEV 2000 0.000 0.000	H HI VARCH) VARCHID DBJ DEV TANGGT ANDRE	1 .198E+03 .737E+04 0.000 646,474 338,056
- 100									NCTION FO							

					•ane	SUB*AREA RL	940	COMPUTATION					
		POTE	PUTENTIAL RI	ESERVI	DIR INF	L RESERVOIR INFLOW ISTAG ICOMP IECON 0 0	17 A P E	1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	JPRT	INAME	PATAGE 0	TAUTO	(1)
			ā	PREVIOUSLY		GENERATED PLAN	HYDROGRAPHS	PHS READ	FROM TAP) (1)			
		•			œ			.ส.	. 87	76			148.
			040	•	004 7		210.	100 100 100 100 100 100 100 100 100 10	9092	100 C		.00	150
J		.097	S G S	• •	313			194.	• • • • • • • • • • • • • • • • • • •	n		7.0	080
		•07	30.	•	20								-
	• 0 7	•		•	o			.	7.	•		•	•
	***		*	***************************************			****		***	# # # # # #		****	
						HYDROGRAPH	RAPH ROUTING	9 2 1					
		PROP	OSED RE	SERVO	3								
			1STAG TE	1 4 0	I COMP	IECON 0	TAPE O	JPLT	JPRT S	INAME 1	ISTAGE	IAUTO 0	
		0.0	000°0 000°0 0	800	0.00 0.00	IRES	PLAN 1 RGUTING DATA RES ISAME	, ao	a Wall	IDVA PV			
		0.0	00000 00000 00000	8 00	A V G	ROU IRES	PLAN 2 ROUTING DATA ES ISAME 1	1001	PMP1	IOVR	 		
			NSTP		NSTDL.	LAG	AMSKK 0.000	× 000° 0	18K	STORA -1.			
CAPHX 25000.	CAPMN 0. 20	COOL 2005	ELEVL 975.00		1 05.	RESE COOM 100.00	RESERVOIR DAT	ARDSCNT .0504	0000	ELEVT 975,00	EXP 0.00		
CAPACITYS ELEVATIONS COSTS	on o		2500. 1000. 1500.	2 - W 2 - W 2 - W 2 - W 3 - W	0000 0000 0000 0000	5200. 4030.	6800 1045 3600	0000 1000 1000 1000		10750	15500. 1090. 5550.	21.000 1.1000 0.005	30000. 1120.
OUTLET CREST ELEVATIO	VATION 18	1044,07	4	STORAGE	3E OF	6701							
STORAGE= OUTFLOW=		7	1023. 416.	1948.		3845. 3885. 1247.	C STORAGE 6701. 1662.	OUTFLOW FUNCTION 10674, 1424 15182, 2856	PUNCT PER PER PER PER PER PER PER PER PER PER	7. 5.	18469.	23711. 55248.	30000 68369



	297. 435. 1080. 1185. 18039. 17514. 5603. 4674. 1434. 1418.	11 11 11 11 11 11 11 11 11 11 11 11 11	INAME ISTAGE IAUTO	STURA LSTR 0.000.0000.00000000000000000000000000	17369. 17369. 492. 19.49. 1436.
	185. 17732. 6662. 1616.	8852. 8752. 13575. 1705. 5366. 101AL	**************************************	1 P M P 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOTAL
N 2, RTIO TOT ANN	135. 6449. 6411. 7849. 1632.	8855 88519 88519 88519 72*HDU 4271 11:3	11437 11NG 12PLT	AME 100PT 0 000X 0 000X 100X50	72-HUUR 72-HUUR 269. 19.49
110, PLAN CAP COST 3563.	007F1.0w 897. 112. 112. 144. 648.	8 91 91 91 91 91 91 91 91 91 91 91 91 91	M STUMAGE # 114 ******** HYDROGRAPH ROUTING CATION REACH IECON ITAPE J	ING DATE OF OOO OOO OOOOOOOOOOOOOOOOOOOOOOOOOO	24 HGUR 24 HGUR 613. 17. 16.51 12.7.
STATION RESERVOIR 6701.0	10000 10000 10000 10000 10000 10000 10000	33.5.4.4.0.8.6.8.6.8.6.8.6.6.8.6.6.8.6.6.8.6.6.8.6.6.8		4 4 4 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	6-HUUK 907. 25. 25. 24. 6.10
8 A		## ## ## ## ## ## ## ## ## ## ## ## ##	MAX************************************	N N N N N N N N N N N N N N N N N N N	968 941 941 941 941
	1006. 1711. 11958. 11958. 1516.	OOT 10 WWOEFT	집 이 경기를 하고 있다.	S CLOSS 0 0.000 NSTP8 50.	0001 C 6001 C 6001 C 6001 C
			POTENTI	0°0 0°0 0°0 0°0	
	105 105 120 120 130 130 150 150 150 150 150 150 150 150 150 15	743. 1410. 15538. 1149. 5934.			

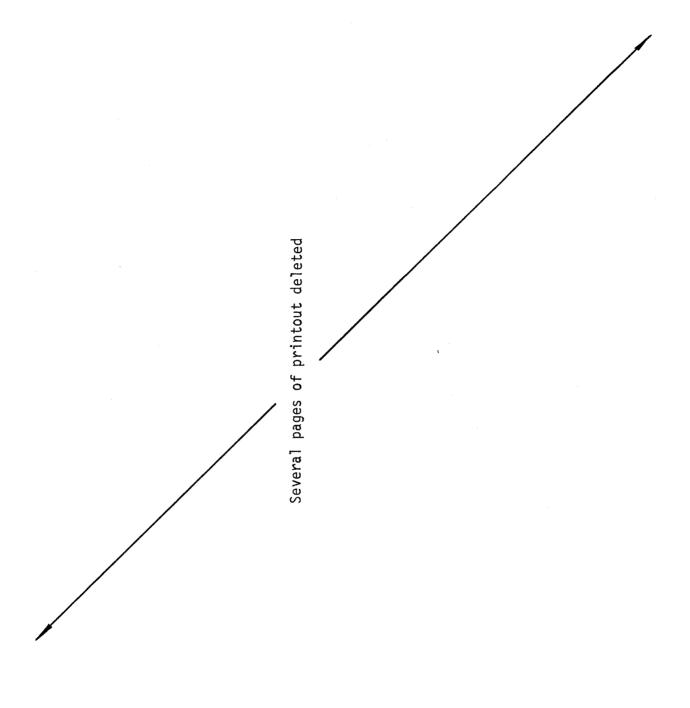


11.PR																																						-
0.00000																																					¢	•
ADSCNT 0.00000																																						
IAGST																																		_	XDSCNT	02040	0300	
DGPRT 0.000																						m	0	N	6 0		N	•		ir.	0			9	XANCOT	.08300	8 3.00	٠ م د د
TRGT		× 20 ×	0.00	00000	1.000	005	3.200	4.700	6.500	7.800	9.300	1.000	3,700	15.600	000	0000	0000	002.0	*			ئىدا	0.0	29.	3.6	£.	5.1	E 4	7.7	•	07.	21.97		25	NEG 1X			
NDMG ISAME 3 0						700								6.600		· .			THIS DAT			TYPE 2	00.0	05.	1.73	2008	2.28	1.67	1.08	.50	77.	10.02	Č	TOTAL	X	0058		
ND NG S	N N																,		T 0 T	 Z		TYPE 1	00.0	.07	078	. 31	.33	.27	71.	50.	. 0.2 50.	1,59					.0055	071
NFL00 16	1 4 0	TYPE	00000	000.0	.100	200	.300	300	007	500	009.	.700	008	006	000	о с V и	n a	\sim	IL DAMAGES	030 PLAN		_								0	, ,	œ					5000	101
197A	STATION 103	SUM	00000	000.0	1.600	2.400	5,000	7.200	008.6	11.800	•	16.400	60.300	00.00 10.00 10.00		000		001.00	⋖	. No.					Å,							33.5					1700.	67
		PEAK	1030.	1130	1380	1740.	2280	3200	4220.	4600.	5620.	.08480	7540	0700		000151	200	2	T	5 6	TACE TRUE			5,462 1,752		1.769 1.07		.323 .391		ું	.000	VG ANN DMG					CAPACITY	CDS 7.8
	2.5	FRED	000.4	2,500	005.4	3,500	5.500	1.500	006*	. 700	. 500	03.0	ີ ຄຸນ ຄຸນ ຄຸນ ຄຸນ ຄຸນ ຄຸນ ຄຸນ ຄຸນ ຄຸນ ຄຸນ	001	2 4 5	050	. U			FLOUD DAMAGES			3		1940	2021	4312.		10101	8 15177.	ne.	▼					CAPA	

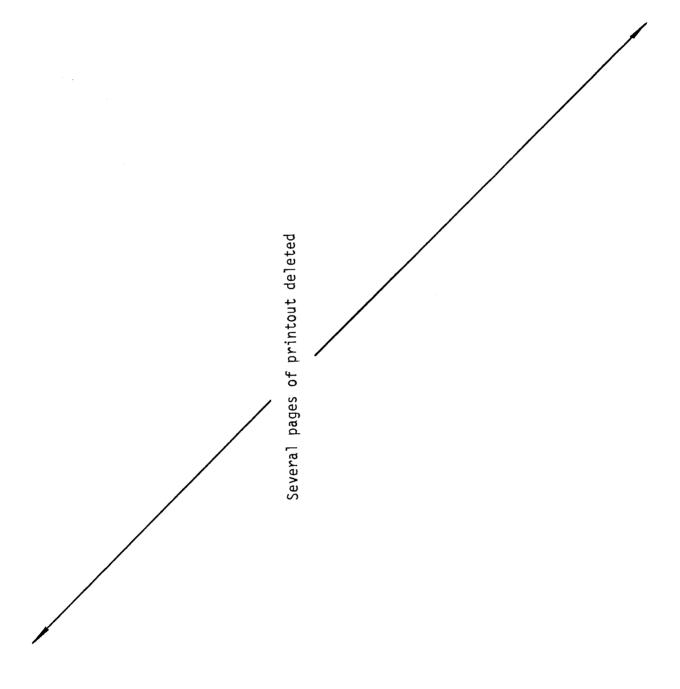
1130. 0.00 0.00 130. 0.00 0.00 130. 0.00 0.00 130. 0.00 0.00 130. 0.00 0.00 130. 0.00	0000 0000 0000 0000 0000 0000 0000 0000 0000	DESIGN DAMAGE FUNCTION
1380. 1380. 1380. 1780. 1780. 1780. 1780. 1880.		DESIGN DAMAGE F
1300. 1300. 1300. 14300. 14300. 15260. 16260. 1	3 	DESIGN DAMAGE F
2280	3 000000000000000000000000000000000000	DESIGN DAMAGE F
2500	Auvaumumum-ecococococococococococococococococococo	DESIGN DAMAGE F
## ## ## ## ## ## ## ## ## ## ## ## ##	24 M - M - M - M - M - M - M - M - M - M	DESIGN DAMAGE F
#800. #800.	2	DESIGN DAMAGE F
5620. 53.4680. 53.4680. 5480. 553.4680. 553.4682. 550.1820. 550.18	2 000000000000000000000000000000000000	DESIGN DAMAGE F
6480. 7340. 85240. 10000. 12100. 12100. 13100. 1300. 1300. 1300. 1300. 1300. 1300. 1300. 1300. 1300. 1300. 1300. 1300. 1300. 1300. 1310. 1	2 000000000000000000000000000000000000	DESIGN DAMAGE F
7340 69 5.01 686 656 6.16 10000 82 6.16 6.16 12100 82 7.7 7.70 12100 1.76 17.51 7.71 13.00 0.00 0.00 0.00 1380 0.00 0.00 0.00 0.00 0.00 0.00 0.0	2 000000000000000000000000000000000000	DESIGN DAMAGE F
8540 82 6.16 10000 97 12100 97 15100 97 17.51 PEAK CATEGORY DANAGES 1030. 0.00 0.00 1380. 0.00 0.00 1380. 0.00 0.00 2280. 0.00 0.00 4220. 0.00 0.00 4220. 0.00 0.00 5480. 0.00 0.00 5480. 0.00 0.00 5480. 0.00 0.00 55100. 0.00 1380. 0.00	2 000000000000000000000000000000000000	DESIGN DAMAGE F
10000. 10000. 11.17 15.100. 11.17 17.51 17.51 17.51 17.51 17.50.	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	DESIGN DAMAGE F
12100. 1.17 9.90 15100. 1.17 1.03 11.03 1030. 0.00 1340. 0.00 1340. 0.00 1340. 0.00 1340. 0.00 1340. 0.00 1350	\$ 000000000000000000000000000000000000	DESIGN DAMAGE F
15100. 21000. 1.751 PEAK CATEGORY DANAGES 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1130. 1131.	2 000000000000000000000000000000000000	DESIGN DAMAGE F
PEAK	N 000000000000000000000000000000000000	DESIGN DAMAGE F
PEAK CATEGORY DANAGES 1030. 0.00 0.00 1380. 0.00 0.00 1380. 0.00 0.00 2260. 0.00 0.00 4220. 0.00 0.00 4220. 0.00 0.00 7340. 0.00 0.00 7340. 0.00 0.00 7340. 0.00 0.00 15100. 0.04 21000. 0.00 0.00 15100. 0.04 21000. 0.00 1360. 0.00	\$\\ 00000000000000000000000000000000000	DESIGN DAMAGE F
PEAK - CATEGORY DANAGES 1030. 0.00 0.00 1350. 0.00 0.00 1740. 0.00 0.00 2250. 0.00 0.00 4220. 0.00 0.00 4220. 0.00 0.00 4240. 0.00 0.00 6340. 0.00 0.00 6340. 0.00 6350. 0.00 6360. 0.00 63		
1030. 0.00 0.00 0.00 1150. 0.00 0.00 0.00 1340. 0.00 0.00 0.00 0.00 0.00 0.00 0.00		
1130. 0.00 0.00 0.00 1350. 1350. 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0000000000	
1380. 0.00 0.00 0.00 2260. 0.00 0.00 0.00 0	0000000000	
1740. 0.00 0.00 0.00 2250. 0.00 0.00 0.00 4220. 0.00 0.00 0.00 0	600000000	
ZZE00. 0.00 0.00 0.00 4 220. 0.00 0.00 0.00	0000000	
3200. 0.00 0.00 0.00 4220. 0.00 0.00 0.00		
4820. 0.00 0.00 0.00 0.00 0.00 0.00 0.00		
## ## ## ## ## ## ## ## ## ## ## ## ##		
5620. 5620. 5620. 6480. 6340. 6340. 6340. 635. 1000. 635. 12100. 635. 1310. 630. 630. 630. 630. 630. 630. 630. 63		
ERPOLATED ECUNUMIC DATA FOR TYPE 1300 000 000 000 000 000 000 000 000 00		
T3400 0.00 0.00 0.00 0.00 0.00 0.00 0.00	90	
ERPOLATED ECUNOMIC DATA FOR STATEMENT OF STA	ء د	
10000. 12100. 12100. 142 318 15100. 15100. 1500. 164 5.04 175 1030. 1030		
ERPOLATED ECUNUMIC DATA FOR STATE STATE STATE STATE SUM TYPE SUM TYPE SUM TABLE SUM TABLE SUM TABLE STATE SUM TABLE		
15100	1 -	
ERPOLATED ECUNUMIC DATA FOR STATERPOLATED ECUNUMIC DATA FOR STATE	'n	
ERPOLATED ECUNUMIC DATA FOR STATEM 1030. 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	8	
ERPOLATED FECUNOMIC DATA FOR STAT 1030. 0.000 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		
030. 030. 0.000 0.00 0.0000 0.	ON 1030 PLAN	N C
380.00000000000000000000000000000000000	- - - - -	46 <
380. 944. 200. 1.151. 200. 1.857. 1.857. 1.857. 1.857. 1.877.		
944 947 1.151 220 5.167 7.167 7.167 7.167 7.167 7.167 7.167	•	2 0
947 1.151 200 200 1.857 200 800 6.837 3.3		
200. 200. 30. 30. 30. 30. 30. 30. 30. 30.	0,000	0.7
52.00 6.837	. 78	9
800	1.584	-
	1.784	
620 a a 17	584	2
480. 11.777	0 3,134	5
340. 15,257 .5	1 000	0.63
540. 17,990	3 5.044 1	2.27
0000. 23.165 .8	4 6.576 1	5.75
0.1 950	8 8.631 1	9.26
5100. 37.874 1.2	1 12.372 2	4.22
1000.	5 15,710 2	96.9

		474 48874 600044	
		######################################	E IAUTO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		12176	* WO EO
	700 N	# Z	INAME TOVABLE
	DESIGN O	4 * * * * * * * * * * * * * * * * * * *	UPRT IN
	•	10FF COMPUTATION 11APE JPLT 11APE 2 0 1,RATIO 1 1,RATIO 1 1,RATIO 1 1275 1946 1968	ING OF LACE
> M • • • • • • • • • • • • • • • • • • •	20.39 ANNUAL #	######################################	HYDROGRAPH ROUTING DOATE DIVERSION LECON ITAPE U PLAN 1 ROUTING DATA IRES ISAME I
00000000000000000000000000000000000000		8 5 A 8 8	A V G C C C C C C C C C C C C C C C C C C
00000000000000000000000000000000000000		15TAG ICOM 20 20 PREVIOUSLY 7. 190. 15 1270. 15 1270. 15	RESERVOIR TO 150 CCLOSS
20000 + C	AVG ANN BFI 31.21. UNIFURN PRUTECTION LEVEL =	176. 1150. 460. 10.	X SECUES
1011 1012 1012 1012 1012 1013 1013 1013	N BFI N PRUTECT	*	
# 4	AVG ANN UNIFURH LOCAL PR		
ND. TELON. TELON			

		••		• •							19 1 19 1 19 1, 19 21 1, 18																
		• •		83000 8300			444	716.	75.			M	***	3 -	•••	•		•	• •		• •						
							122	872	÷:			~	•	<u>-</u> ^		•		• •		•	••						
LS T		00		15000.																							
TOVR T	STORA •1.			10000.			4 8 E	1034	125	::		રું	•	จึง	6	•		• 6	å	•	•••	, VOLUME	17375.	.77	19.49	1457	
a o E a m	18K 0.000.		DDSCNT .05040				251.	1184	101.			.	'n.	. M	o.	•	•	• •	ô	•	• •	TOTAL					7774
1001 0	×000°0	• •	ANCST 01500	7500.	20, PLAN 2, RTIU 1		19, 223,		.70%			•	• 70	, d		•	c	• •	•	•	• •	72-HOUR	• 0 0 0 0 0	• 7.	19.49	1437.	
ROUTING DATA ES ISAME 1	AMSKK 0.000	••	DIVERSION DATA RMN THBYR D. 0. 1500.	5000.	20, PLAN	OUTFLOW					STOR	•				•	DIVERSION	• •	•	•	• •	24-HOUR	629		17.74	1613.	
IRES	7 90	• •	DIVER DVRMN 0.	3750.	×	0	, N						r				10						252.	, ,	8,43	766.	
A√6 0.00	NSTUL 0	•••	DVRMX 20000.	2500.	STATION		198.	1327	, 35 V	20		• •			•	•	•	• •	•	•	•	PEAK					
000000	ST DB						187.	1243	200	•		• 0	• ห	, ao		•	•	• •					_				
0°0 0°0		100000.		1250.			75.	1115.		• 0 #		•	• •	10.	•	• •	•	• •	•	• •	• •		3 C	INCHES	Σ P U	THOUS CO M	
		••		00			_	=======================================																		ቿ	
		STORAGE		CAPACITYS COSTS			161.	en or or or or or or or or or or or or or o	57.	10		••	10	.2			•	0	•	• •	• •						



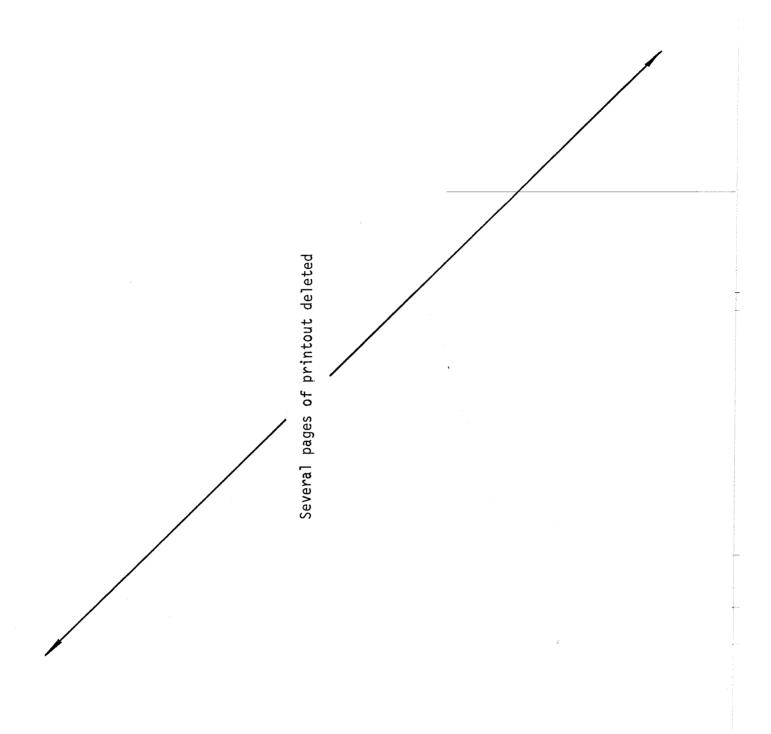
				11656	11956	1707	70	109.		39.	225.	239	. Sb.	3	ณ		670.	670.	670.	•	•	•	
			000	0040	14877	1/54.	219	112.		25.	140	294	35	3	ď		670.	670.	670.	106	•	•	
				*	17560.	10/4	639	121.		53	. 76	351.	33,	ທັ	~		•	670.	670.	568.	•	•	TOTAL VOLUME 285697. 8090. 12.62 320.53 23644. 29139.
•		0	000	****		£120.	566.	159.		. 71	75.	405.	43.	5.			•	670.	670.	670.	•	•	
01 tx *2 v	TOT ANN S		•				300	131.		,	65.	443.	59.	•	, n		•	670.	670.	670.	•	·	72*HDUR 11562 12662 320653 23624 29139
20, PLAN 2,	CAP COST 707	OUTFLOW .				3,467	357.	136.	STOR) •	• 09	461.	79.	7.	· · · · · · · · · · · · · · · · · · ·	NOTRETAIN	0	670.	670.	670.	• 0	•	24eHdUR 10926e 1309e 11:58 294e 294e 21682e 26745e
STATION	DIVERSION 569.9		• 00 • 00		26678.		441.	147.			56.	454.	103.	•			• 0	670.	670.	670.	•0	•0	6-HUUR 24 21360: 1 605: 143:79 10597: 2 13072: 22
								157.		•		424.			ň		•				•0	•0	23 000 000 000 000 000 000 000 000 000 0
						-	759.			· ·	. mo		155.		·		•			670.	•0	•	THOUS COT
				2417		_																	
			601	K128	15789	4536	1014.	176		٠,	777	3.6	191	?∂	3		0	670	670	670	0	0	



																		. 1 5 - 1
11.68																		
AANC81																		
ADSCNT 0.00000	•													I				
LAGAT LONG																		
0.000 PR																		
TRGT 0.																		
NOME ISAME																		
NONG P	-																	
NFL00	PLAN	TYPE	0.000	0.000	1.600	2.400	5.000	7.200	9,800	11.800	3,900	16,400	0.300	23,100	8.000	34.500	300	0.100
	2030			_												, ,	7	
18TA 2030	STATION	M∪K	0.000	000.0	1.60	2.40(5.000	7.200	9.80	11,800	13,90(16,400	20,300	23.10	100.EX	34,500	44.300	50,100
	~		30.	30.	.00	0.0		. • 00	0 Z	00		90	ं •	•	• 00	. 00	• 00	.00
	DATA		0.1	=		_	25	32	4.7	917	50,	79	73	8540	001	2		≥ •
		FRED	000.9	5.500	4.500	3,500	2.500	1.500	006	.700	. 500	.350	. 25°	051	001.	000	020	.005

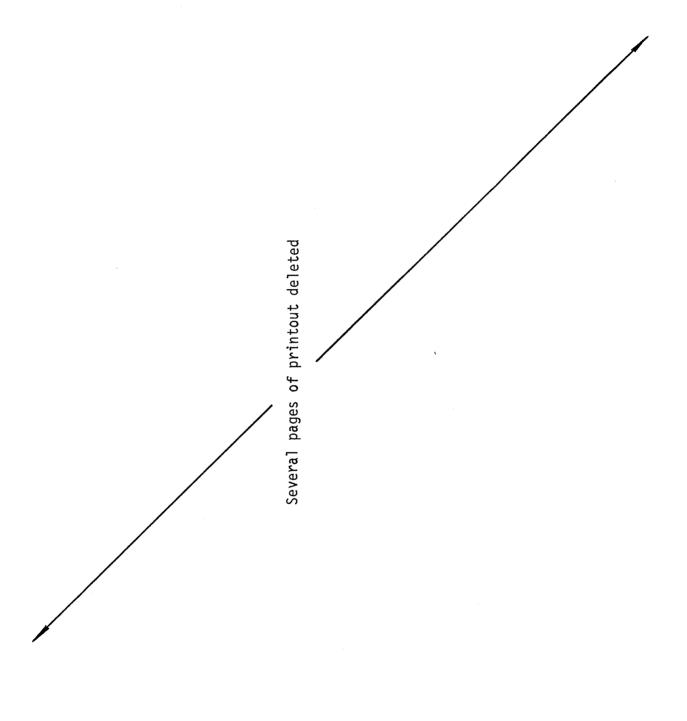
1130						
1300	1.60					
1740.						
2280.						
3200.						
4220.						
.0084						
2620.						
6480	16.40					
7340.	0.3					
8540.	3.1					
10000	8.0					
12100.	. 5					
15100.	. 7					
51000°	-					
			MAX TAX			
* XV3d	- CATEGORY	DAMAGES		2000	DAMAGE FUR	FUNCTION -
1030.	.00)				
1130.						
1380						
740	• :					
- 0000	•					
0000	00.5					
0000						
- - - - - - - - - - - - - - - - - - -						
*00 P7						
.0295	3.0					
6480.	4.4					
7340.	0.3					
8540.	3.1					
100001	6					
12100.	=					
15100.						
21000.	50.10					
() () () () () () () () () ()						
A LEU EC	MUMIC DAT	S S	2030 PLAN	^		
Ψ.		TYPE				
1030	c	00				
25	0	00000				
1380	0	000.0				
1740	•	0000				
0.628	0	0000				
3200	C	0000				
4220	0					
4800	0					
5620	•					
7653		000				
7660	•	o.,				
0.380		750.14				
_	10	0.1				
2 6		•				
-	•	-7				
<u> </u>		-				
100	್ಟ್	-				
	•					

940. 6.000 .284 1115. 5.462 1.752 1506. 3.097 1.776 2286. 1.769 1.075		100000 MH 1000000 MH 1000000414						
, m -		0000 W -						
		000 W-						
	, =	0 m-						
Ť		3.44 10.45 14.5						
•	36.	 						
•	v	1 19						
•								
AVG ANN DMG	5.51	5.51						
AVG ANN BET	28.07	28.07						
UNIFORM PROTE	PRUTECTION LEVEL	©						
5	CAP COST	r in N	TOTAL AN	ANNUAL.		8 0 2 0 0 0 0 0 0	7660	
***		· · · · · · · · · · · · · · · · · · ·		· 我就就完全我也就是		化妆妆妆妆妆妆	***	****
			SUB-AREA RUNDFF	UNDPF COMP	COMPUTATION			
	LOCAL	INFLOW TO FOR ISTAG ICO	TOREBAY POOL	₩ ſ\ 6. +- H	, , ,	JPRT	TNAME 16TAGE	GE IAL
		PREVIOUSL	Y GENE	HYDROGRA	PHS READ F	ROM TAP		
ณ์	Č	٠.		1	7.	•		7.7
.55.	58	• 79	. 99	70.	•	90 i	108	160
183.	.54.	129.			£03	383.	333.	278.
	7	01	- - 00					• • •
.	,	•		*	100	Š	N	i vi
1 日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日		************						
			COMBINE	E HYDROGRAPHS		t		
		THE PERSONS	\$ 6 0 0 0 0 0	i				
	19140	ISTAG ICOMP	ICOMP IECON	UL ITAPE	JPLT	JPRT	INAME ISTAGE	GE IAU
					•			
		SUM OF 3 HY	DRUGRAPHS	AT 30	PLAN 1	RT10 1		
		PEAK	6-HUUR	24.HOUR	72-HUUR	TOTAL	VOLUME	
	9 00 2 0 3 0		6	**************************************	• . • . • . • .		#00K3•	
	INCHES		٠ ٢ ٢	9	.78		. 78	
	AC		06.00	70 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	19,96		06.6	

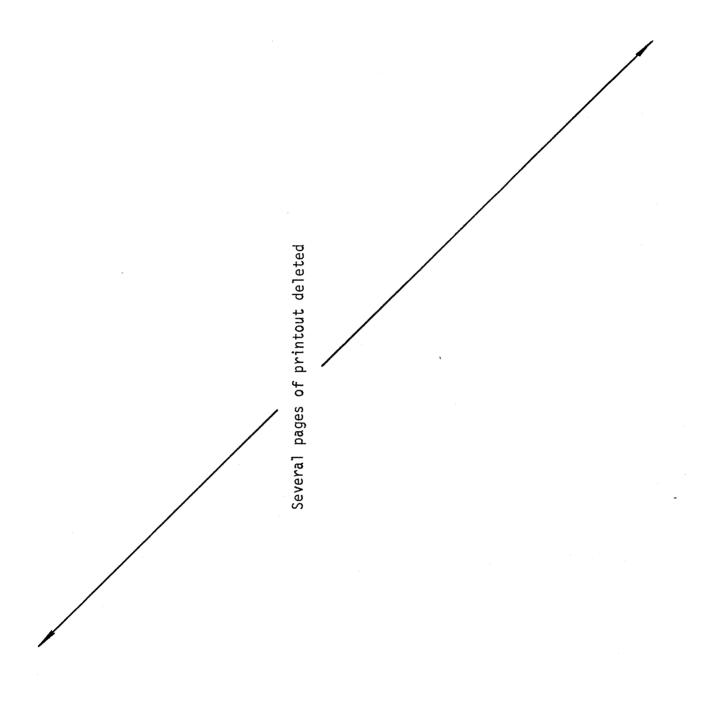


~
Z
-
•
_
0
303
I
Ω.
⋖
Œ
3
ō
Œ
۵
≍
_
I

					200000 000000 -00000	~ @ Q V V V V V V V V V V V V V V V V V V				6 000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2002 2002 2000 2000 2000 2000 2000 200
GE TAUTO	α -		• • •		2444 2444 2446 2446 2446 2446 2446 2446	M 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				400004 4000000 40000000000000000000000	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
ISTAG					M4000K		≅				พญิติลิส
E A Z E	IOVR 0	STORA -1.	•••		M40004	-40-4 -80-4 -80-84	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			3,000	-30808
JPRT	0.0 X 0.0	TSK 0,000			######################################	50 30 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TOTAL		a.		47-44 84-46-60 94-78-60 64-78-60
JPL7	10P1 0	×000°0	••	1, RTIO	2003. 2003. 2000.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	72*HDUR 670* 19* 19*75 3326*	1036.	1, RTIO	0.000 10000 10000 10000 10000	-04-05 -04-05 -04-05
ITAPE 0	PLAN 1 ROUTING DATA RES ISAME 1	AMSKK 0.000	• • •	305, PLAN	0077108 15. 15. 2000. 2000.	8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	24. 1. 1.000 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	A G E	305, PLAN	18. 18. 314. 1200. 1200. 1200.	50 00 00 00 00 00 00 00 00 00 00 00 00 0
SITE	IRESOU	CAG C	•••	z	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	, 1 00	NU WUL WOW	M STORAGE	Š		
PLANT COMP	A V.G	NSTDL 0	•••	STATION	14. 1078. 1200. 1800.	5. 75. 359. 1011. 749.	мом Х.•. Т	MAXIMUM	STATIC		2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
PUMPING ISTAG 305	000°0	NSTPS	100000		14. 187. 1200. 1200.	1.0.9% 21.000% 611.00%				 WWW. WWW. WWW. WWW.	13 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
PROPOSED	0°0 0°0 0°0		1200		14. 150. 200. 546.	90 80 80 80 80 80 80 80 80 80 80 80 80 80	CPS CAS INCHES INCHES AS AC AC AC AC AC AC AC AC AC AC AC AC AC			N N N N N N N N N N N N N N N N N N N	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
			••				(1985년) (1 시 후 1) (2) (2) (1 시 년 1) (2) (3) (4 시 년 1)				
			ASER		11.25.00.00.00.00.00.00.00.00.00.00.00.00.00					12009 12009 12000 12000 12000	0.000 2.000



		66		ૺ૾૽																							
		00					80 e	1200	200	287.		•		514.	3 (. 96.		•	•	•	00						
2 - 2 -		• •		00000 8670			7 40°	• 0	2002	315.			107.	490		105					• •						
ZOVR 0	STORA -1.	• •		•				1200	0 2 2 2 2 2	2		•	93.	· (0.44 0.44	114.	<	• •	•		• •		- ~,	1087.	18.85	3174.	
0.0 X 0.	1SK 0.000		1 PDSCN1			•	247	1200	1200	374.		•	82.	907		125.		•	•	•	••	Ė					
1001	×000.		T DATA ST PANCST 0. 02300	0000	2, RTIO		 	. 660	• • • • • • • • • • • • • • • • • • •	407.		'n	72.	366.	. 572	136.	c	• •	•	•	••	91101-67		* T	18.85	3174.	
PLAN 2 ACUTING DATA S ISAME	AMSKK 0.000	••	ING PLANT (DN PWRCST 0. 100.	2000 2000 2000	05, PLAN	FLO₩					0.1.0	5					OMPING	• •	•			7	1151	 		2818	
ROUT	O O	• • •	PUMPING PMPDN 1500.	1000.	M	ā.	187	96		7 7		ว เก	9	N 5		77	⊋°					0 0 0 0	500	. 7	3.54	595. 734.	
A V G	NSTOL		NE O	• 000°	STATION	3	159.	. 830	1200	3		s.		• 004	424	161	ۓ			•	••	•					
000000	NSTPS 1	100000.	10000	ပိုင်		3 •	131.	. 200	• 00	. 626		'n	ચા		. •	-	• 0		•		••	07 7:	1200	77			
0 0 0 0		1200.		250.					-										•				CFS	CMS	X X	ACEFT S CU R	
.		• • •		• •			105.	500	1500	578		'n	5.5	- 30 - 31 - 31	264	193			٥.	•) o					THOUS CL	
		STORAGE: OUTFLOW:		CAPACITYS			•08	46t	2002	634.			2	543	8	211.	•0	0	• 0								



8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8						20 S	0000	2002	282	0000 0000 0000 0000 0000 0000	, r	44440 4440 440 400 40	
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8						20	0000 0000 N. W. W.	00	209	37770	900	**************************************	
74440 0 74440 0 74440 0 74440 0 74440	62367. 1756. 1756. 1021. 30.62. 5157. 6361.					200	• • • • • • • • • • • • • • • • • • •	200	149	17276. 36986. 39990.) }	2000 2000 2000 2000 2000 2000 2000 200	VOLUME 63666 18686 10.23 31.26 5264 64944
2457 2457 2457 2457	000R T01AL 898. 828. 557. 611.		• •		7 ANN 8	33	1200.	00	111 363	36025.		2000 2000 2000 2000 2000 2000 2000 200	00R TOTAL 51. 30. 23. 26. 26. 94.
NG 00.0000000000000000000000000000000000	HOUR 72=H 34. 34. 4.14. 556 51. 4.14. 501. 51. 51.	25706.	PLAN 2, RT		WR COST TO	. 280 1000		200	93	11716 34865 39965	ì		0008 72*4 34.0 10 0 114.0 114 34.0 52 34.0 52 34.0 52
PUMPI 2457 2457 2457 2457	0000 00000 00	STORAGE =	305,		AP CC		11.000 0000	500	0 0 0 0 0 0 0	4255 43480 39890		2457 2457 2457 2457	0008 24. 34. 554. 34. 310846E
24577 24577 24577	NO N	MAXIMUR	STATION		PUMPING C	200	- 0000 N N N N N N N N N N N N N N N N N	200	83 725	31851.	}	2457 2457 2457 2457 2457	PEAK 011 134. 011 134
2002 2002 2003 2003 2003 2003 2003 2003					•	247. 1200,	1200.	1200.	82 575	5397 29972 39556		20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
7.4.4.0 7.4.4.0 7.4.4.4.0 7.4.4.4.0 7.4.4.4.0 7.4.4.4.0 7.4.4.4.0 7.4.4.0 7.4.4.0 7.4.4.0 7.4.4.0 7.4.4.0 7.4.4.0 7.4.4.0 7.4.4.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	THOUS					200	1000	2	8.2 456	27844.	•	0000 0000 0000 0000 0000 0000 0000 0000 0000	IN THOUS A
0 2 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				JLP=1935416		9 8 8	1200.	00	8 49 34 73	10000000000000000000000000000000000000	,	#*************************************	

1 PR																																						
0.00000																																			N. Ja			
ADSCNT 0.00000																																						
0																									•													
000 0 000 0 000 0																																						
1861 0.																																						
NOWG TO ANNOAL												S DATA			TYPE 2	000	3 (3 ,) 0 10	. a		90.6	59*7	3,86	05.40					60	77.	1.28	2.79	4.18	3,21	06.2	14.90	30.50	
กลื่ง วาลิง	() ()		10.500	15.000	52,500	02.000	005.50	000.00	390,000	000.04	80	FOR THIS																									0	
K Č	-										T.		o NA		TYPE	00.0		18.50	100	300.95	223.56	106.13	75.28	1064.81	PLAN		TYPE.	•	2 10	1.56	5.33	56.66	120,38	78.78	64.3	327,31	737,50	
NFLOD 10	OS PLAN	1 C	7.5	75.000	125.0	3150,000	5850.000	000.050	000 0006	0.0590	11250,000	AL DAMAGES	i.												305 P		w∩s .))	> 7	00		87	50	60	22	2	00	
31A 305	M	E 0							000	000 10	000	ANNIAL	14		Ś	•	۸.	∾ีเ			7 2	110.98	79.	1110.			s.	• •	•	N	٥	.65	124,50	.18	67.	342.2	768.00	
	STATION	•	• • •	000.06	11177	3255	6052	7350	9390.000	11190	11835.000	AVERAGE	STATION	9089 808	L N	000	5.5	197	00.	7 2	037	013	900	DMG	STATION	PROB	- : Z	000	101	500	119	.075	037	.013	800	9 M Q	BFT	
	DATA FOR	x 000	* 000	0000	7000	12500.	20000	28000				å	r Č	XCOX		0								VG ANN D	S FUR		FREG	0 00%	0 8 7		60	.075	030	600	.004	AVG ANN	AVG ANN	
	DING	2 6	004	0 4	250	001	020	000	010	100	200	NO ADJUSTMENT	4		D. STOR	-	_			1000 V		8 33699	53876		FLOOD DAMAGE	Ť,	NO. STOR			1630								

OPERATION S	STATION	4 4 4	Z Z	8ATIO 1	RATIO 2	RATIUS APP	LIED TO RATIO 470	FLOWS RATIO 5	AATIO 1.50	AA110 2.20	RATIO S.2.	RATIO 9
НУВКОСВАРН АТ		35.10 90.91)	- "	1343. 38.02)(1343. 38.02)(1611. 45.62)(1611. 45.62)(2685. (76,03)(2685. (76,03)(3759. 106.44)(3759. 106.44)(5370. 152.06)(5370. 152.06)(8055 228.093 8055 228.093	11814, 334,54)(11814, 334,54)(17453 494.20)(17453.	23628 669.073 23628 69.073
ROUTED TO	•	35,10 90,911	- "~	1343. 38,02)(588. 16,65)(1611. 45.62)(666. 18.85)	2685. (76.03)(910. (25.76)(3759. 106.44)(1084.	5370. 152.06)(1324. 37.48)(8055. 228.09)(1656, 46.89)(11814. 334.54)(6328. 179.20)(17453 494.2036 12033 340.7336	669.073 18039. 510.803
ROUTED TO	1030	35.10 90.91)	- . ~	26.65)(525. 14.87)(1139. 32.241 594.	1940. (54.94)(839. (23.76)(2921. 82,713(1005. 28,463(4312. 122.10)(1252. 35.47)(6699, 189,70)(1574, 44,58)(10191, 288,58)(4949, 140,13)(15177 429.7730 10079. 285,4130	20603. 583.42) 15369. 435.19)
HYDRUGRAPH AT	20	35.10 90.91)		1343. 38.02)(1343. 38.02)(45.02) 45.02) 1611.	2685. (76.03)(2685. (76.03)(3759. 106.44)(3759. 106.44)(5370. 152.06)(5370. 152.06)(8055. 228.09)(8055. 228.09)(11614, 334,54)(11814, 334,54)(17453. 494.20)(17453.	23628 669.07) 23628 669.07)
ROUTED TO) 6	35.10 90.91)	- 2	1343. 38.02)(1346. 38.12)(1611. 45.62)(1549. 43.86)	2685. (76.03)(2023. (57.29)(3759. 106.44)(3096. 87,68)(5370, 152,06)(4717, 133,56)(8055, 228,0910 7408,	334,54)(11178, 316,53)(17453 494.201 16833 476.651	659.07) 659.07) 652.026
RUUTED TO	2030 (35.10 90.91)	- ~	941. 26.65)(26.61)(32,24)	1940. 54.94)(1500. (42.46)(2921. 82.71)(2280. 64.57)(4312. 122.10) (3591. 104.51) (189,70)(5939, 168,16)(10191. 288.58)(9455, 267.74)(15177 429.773(14455 409.313(5603. 583.423 563.283
HYDROGRAPH AT	ů Š	25.90)	- "	453. 12,81) C 12,81) C	15.38) 15.38) 15.38)	(25,63)(25,63)(25,63)(1267. 35.88)(1267. 35.88)(1810. 51.25)C 1810. 51.25)C	2715. 76.8831 2715. 76,8831	3982 112.763(112.763(5883, 166.57)(5883, 166.87)(7964 225,52) 225,52)
3 COMBINED	°F	80.20		2219. 62.84)(1660. 46.99)(2676. 75.79) 1939. 54.90)	4563, (- 129,21)(- 2712, (- 76,81)(194,23)(3947, 111,75)(10154, 287,53)(5974, 169,15)(15693, 444,39)(9178, 259,89)(672,47)(14377, 407,11)(35345 1000.86)(25809, 730.83)(48011. 1359.533 38550. 1091.603
AGUTED 10	305	80.20 207.72)		1200. 33.98)(1200. 33.98)(33.98) 33.98) 33.98)	1200. (33,98)(1200. (33,98)(33,98)(33,98)(33,98)(1200. 33,98)(1200. 33,98)(33,98)(1200, 33,98)(1200, 33,98)(1200, 33,98)(1200 33,98)(33,98)(33,98)	33,98) 33,98) 33,98)
				EAK STORAL 1056. 1278.)(749.)(CES IN ACH 1486. 1833.)(1088.)	RE FEET (10 3587, (4424,) (1554,	00 CUBIC M 5904. 7283.)(1630. 2011.)(ETERS)*** 11788.)(3274.)(15876. 19583.)(5603.	24937 30760,)(13184, 16263,)(47734.10 27734.10 31708.10	53876 36455 49354

PARTO PARTO O.											× + + + + + + + + + + + + + + + + + + +
617 8	2				7			827.	• • • • • • • • • • • • • • • • • • • •	# # # # # # # # # # # # # # # # # # #	18NF18 5773
DIV 7 670.	MARY OF DOLLAR	7408.	373.	257.		:	350			He has the second of the secon	AND MG
VAR 6	MANCE SUM		*	*		* **		7 4	* * *** *	2 2 2 2 2	ANDGES
SYSTEM OPTIMIZATION RESULTS AR 4 VAR 5 VAR 6 0. 0.	AND PERFOR	*	# # #	CEMENT CO	*	*	* * *			MAX THI ZE	14NCST 465.
SYSTEH OP VAR 4 0.	SYSTEM COST AND PERFORMANCE SUMMARY Same as input . Normally 1000's of Dollars)	* *	L COST *	AND REPLA		ISTING CON	TIMIZED SY	ION CBENEF	BENEF118 *	**** OPTIMIZATION GBJECTIVE - MAXIMIZE BYSTEM NET BENEFITS ****	ANDMPR
VAR 3	SY (UNITS SA	L COST * *	ZED CAPITA	O.M.POWER	. 0387 .	16ES EX	16ES OP	AGE REDUCT		IMIZATION	ANFCST 254.
× × × × × × × × × × × × × × × × × × ×		SYSTEM CAPITAL COST * * * *	SYSTEM AMORTIZED CAPITAL COST * #	SYSTEM ANNUAL D.M. POWER AND REPLACEMENT COST	SYSTEM ANNUAL COST	AVERAGE ANNUAL DAMAGES EXISTING CONDITIONS	ANNUAL DAMAGES OPTIMIZED SYSTEM	AVERAGE ANNUAL DAMAGE REDUCTION (BENEFITS)	AVERAGE ANNUAL SYSTEM NET		TFCST 5034.
VAR 1 5701.		TOTAL SY	TOTAL SY	TOTAL SY	TOTAL SY	AVERAGE	AVERAGE	AVERAGE	AVERAGE		